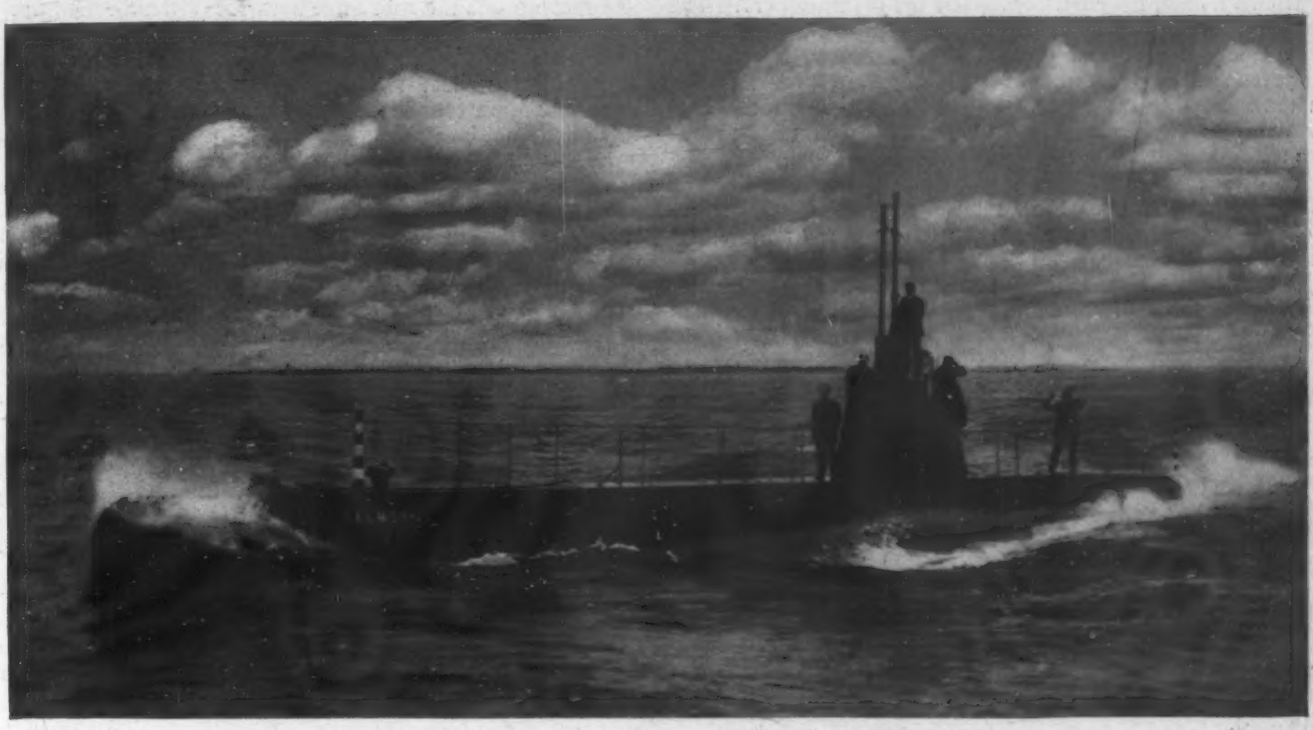
YACHTING

VOLUME XII, NUMBER 2 AUGUST, 1912 25 Cents a Copy $2.00 a year



THE SUBMARINE SALMON AT FULL SPEED ON THE SURFACE.

The Story of the Submarine

The Development of the Most Destructive Type of Naval Vessel and the Part That the Diesel Engine Has Played in the Perfecting of It

By GEORGE S. GOLDIE

THE submarine torpedo boat is a terror of the sea which resembles the water moccasin of the bayou in quietness of approach and in the terrible destructiveness of its bite, and, even more, in the dread its unseen presence inspires. It has eyes more penetrating than man's, and ears more sensitive by far than the keenest known to any living creature.

Sighting a battleship rising above the horizon the submarine will quietly settle below the surface beyond the reach of shot or shell, leaving naught above save a pair of eyes in the tips of small tubes. Thus it pursues its way until within two miles of the enemy when it sinks entirely from view and with human intelligence proceeds with an accuracy almost beyond understanding. When within half a mile the periscope emerges for one brief moment and, settling again from sight, with a mighty hiss the submarine ejects from its mouth a fang more deadly than that of the water moccasin of the bayou. In it is stored a destructive power capable of destroying the largest battleship built. The knowledge of what such a machine may do when in the vicinity of a battleship with from 800 to 1,200 men on board is paralyzing in its effect.

We will have to go back some 300 years to find the earliest attempts to go below the surface of the water in a vessel. The first undisputed success was achieved by David Bushnell, an American. He devised a turtle shaped boat in 1775. Water could be admitted to it, and it was raised or lowered by a screw-shaped oar. An ordinary oar, or the rudder, was used for propulsion, the power being furnished by one man. With the aid of this boat an attempt was made to fasten a torpedo containing 150 pounds of powder to the bottom of the British ship Eagle in New York harbor. The ship was saved only by the torpedo falling off and exploding harmlessly an hour later.

Fulton constructed one submarine in America and two others in France in 1801. One of the French submarines, the Nautilus, descended 25 feet, remained under water four hours and placed a torpedo on a vessel's bottom that blew it into fragments. This boat was worked by man power.

The first engine-driven submarine was the Plunger, built in France in 1863 by Charles Brun. It was 146 feet long and 12 feet in diameter, and used an 80-H. P. compressed air engine.

During the War of the Rebellion the Confederates constructed several small submarines which they called "Davids." Some were driven by steam and others by hand. They carried a 50- to 75-pound powder torpedo on the end of a long spar projecting from the bow. In 1864 one of them blew up the Federal ship Housatonic and was herself sunk with the loss of all hands by the resulting wave filling her through an open hatch.

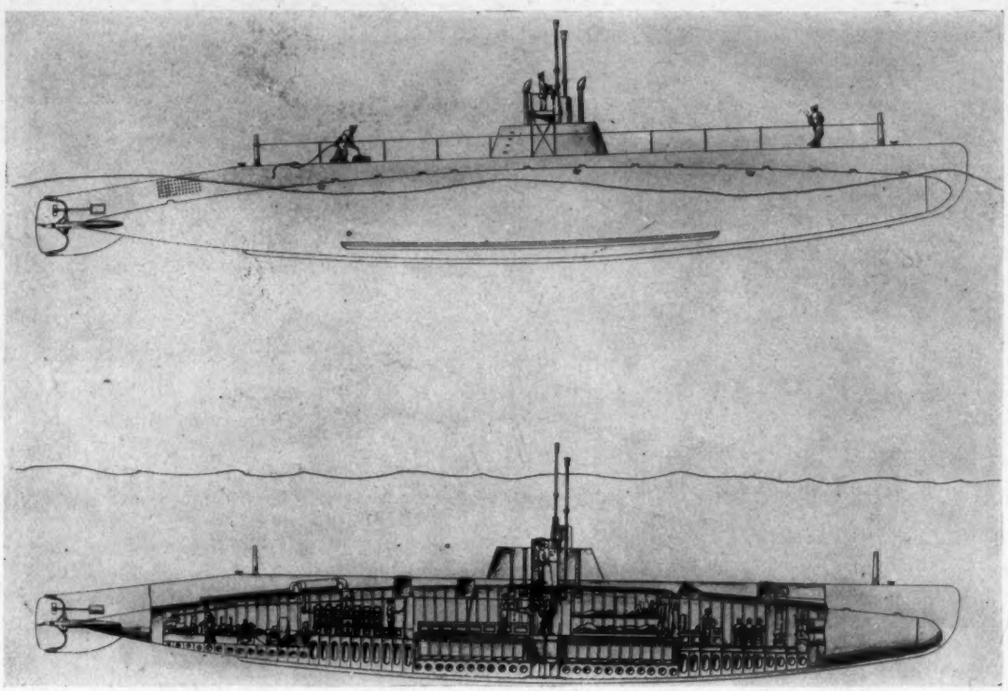
From these efforts the submarine of the present day has been evolved.

Since 1890 a keen rivalry has been witnessed in the United States between the Lake and the Holland types of submarines. After many acrimonious debates in Congress, during which charges of partiality, prejudice and graft were freely made, the

two types were submitted to a series of elaborate and exhaustive tests under Government supervision in Narragansett Bay. The Holland type proved superior for the needs of our navy in so many respects that our Government, and the Governments of a number of other countries as well, have adopted it.

Mr. J. G. Holland began working out his ideas in 1877. The cigar-shaped hull was adopted because its elongated, oval shape was most easily driven and offered the greatest resistance to external pressure, our Government requiring the extreme test of each submarine being drawn 200 feet below the surface. This subjects them to the enormous pressure of seven tons to the square foot. Above the hull is placed the superstructure which permits of deck space for the crew and the proper handling of the vessel when on the surface. Through the superstructure rises the conning tower, from which the movements of the vessel are directed when possible.

Projecting through the conning tower is one of the periscopes and near by, above the hull, stands the other. On the forward and after ends of the vessel are masts, these being used as guides for depth when the hull is running just below the surface. At the bow of the newer boats is a horizontal rudder; by depressing this rudder and elevating a similar one at the stern the vessel may be deflected toward the bottom while running on an even keel. Also below the waterline at the bow are rotating caps covering the four torpedo tube openings. At the stern are the horizontal rudders for sending the vessel down or up, and the perpendicular rudder for steering to the right or left. Besides these, there are at the stern the two propellers.



SECTIONAL VIEW OF A HOLLAND SUBMARINE, ON THE SURFACE AND SUBMERGED.

When submerged the hulls of these vessels represented neither more nor less than air bubbles, and were liable to roll sideways, or incline toward either end. The first problem to solve was that of stability. The earlier types met this by having water tanks at the ends that could be more or less filled with water as the vessel was raised or lowered. This method was unreliable and dangerous as any movement of the sea or shifting of weights, such as a man leaving his station, set the water in motion and heeled or inclined the vessel in like degree. Mr. Holland overcame this by placing the great weight of the electric batteries and some water tanks on the bottom of the vessel. These tanks are kept full that there may be no shifting of the contents. He also placed tanks in the bow and stern. They are filled until the buoyancy of the hull is only 750 or 800 pounds, at which buoyancy by means of the horizontal rudders the vessel can be sent to any desired depth.

The delicacy of manipulation is so refined that the tanks can be further filled until the pumping in or out of a single gallon (8 pounds) of water will send the 350-ton craft to the bottom or to the surface. Indeed, so wonderful is the control that by the use of the one gallon the vessel may be held suspended indefinitely at any depth within a variation of two feet.

The power for driving the submarine was long a source of perplexity. The fumes of gasolene are as deadly as many other gases and more dangerously explosive than gunpowder. As long as gasolene was the substance used for power in the internal combustion motors, and this type of motor was the only one of practical use in submarines, association with its dangers was a necessity. In the effort to dispense with such a volatile substance, wheat dust, pulverized grasses and seeds, heavy oils and even tar have been used.

Within a recent period, however, there has been developed by Mr. Rudolph Diesel a motor that uses neither gasolene for power nor electricity to fire the charge. The abandonment of electricity with its mysterious and elusive tendencies eliminates three-fourths of the troubles heretofore connected with operating internal combustion engines; and the forsaking of gasolene dispenses with *all* of its dangers. The troublesome carburetor is also avoided. This machine is started by the opening of a valve leading from a compressed air chamber charged to 800 pounds; the five-ringed piston is pushed up until the air in the cylinder is under a pressure of 500 pounds and consequently heated to about 1,000 degrees; then there is driven into the compressed air a definite charge of fuel oil which is instantly fired and converted into heat units by the heat generated in the highly compressed air. The explosion drives the piston down and in the fraction of a second there follows a blast of fresh air which thoroughly scavenges the cylinder of all burned gases. The momentum of the machine sends the piston up, compressing a new charge, which is exploded and the operation goes on about 350 times each minute. So mobile are these motors that by the simple turning of a lever the fuel supply is shut off and the compressed air turned on, thereby reversing the motor and starting the reverse explosions without jarring the machine, all in the space of eight seconds. To start the machine ahead the lever has only to be brought to its original position, the machine being reversed smoothly to astern or ahead by the compressed air instead of the more violent explosion of the charge. Gasolene, electricity and carburetor have been eliminated and the submarine rendered inhabitable and more efficient. Thus in one bound of achievement we have been transported from the enigmatical and exasperating to the purely mechanical and calculable.

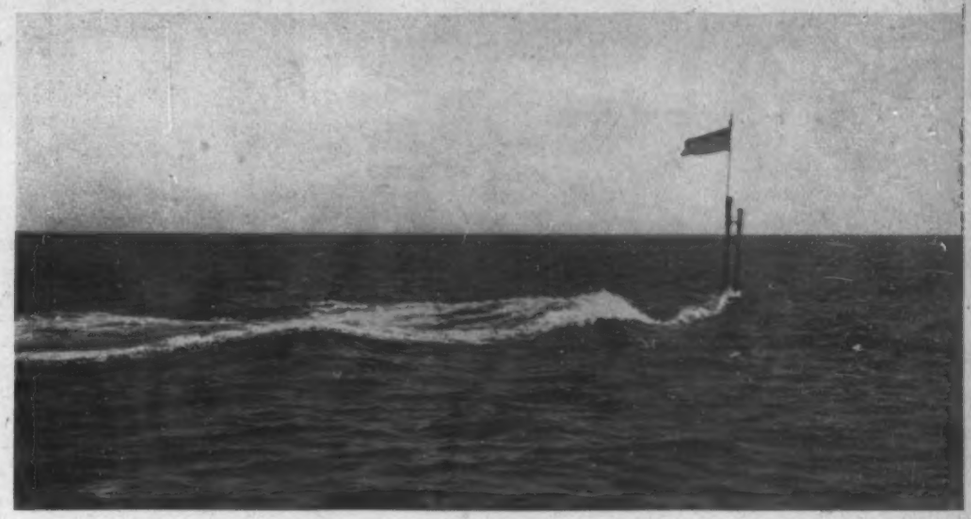
The submarine is driven 15 or more knots while on the surface by Diesel motors of 250 to 450 H. P. These motors are direct connected through the electric motor; the latter comes into play immediately when the boat goes under, and is capable of driving the boat 12¼ knots for 2½ to 4½ hours.

The caps on the torpedo tubes are operated by a wheel near

the inner ends of the tubes. To be in readiness for firing, the inner cap of a tube is swung open, the torpedo inserted, the inner cap closed and the one on the outside of the hull swung off, permitting the tube to fill with water. Air at a high pressure is then released into the tube at the rear of the torpedo; this launches the torpedo which automatically parallels the surface and rushes at a speed of 40 miles an hour, unheralded and unseen, toward the enemy. Recently torpedoes have been equipped with power enabling them to sustain motion for 15,000 yards, or over 8 miles.

The air from the same chamber which is applied to the torpedo tubes is also used for the safety of the vessel and crew by being connected with the water tanks in the bottom. At the manifold air station, which is never, even momentarily, left without a man to tend it, is a valve capable of admitting compressed air into the tanks in such quantities that 60 tons of water are expelled so quickly that the submarine will leap from a depth of 60 feet to the surface in 50 seconds from the opening of the valve. There is also an automatic valve which can be set to release the compressed air for the same purpose when the vessel sinks to a depth of 60 feet.

For the especial safety of the men in the event of the uncontrollable sinking of the ship there are hatches so constructed that they project downward into the hull and entrap considerable air; this provision is further enhanced by bulkheads reaching downward and entrapping air. In these air chambers the men are to collect in time of stress. A fine illustration of their utility occurred in Peconic Bay when, to remedy a difficulty, a submarine was brought to a wharf and the stern raised clear of the water. As the tide rose it began to overlap an open hatch in the bow. A spectator on the wharf noticed this and in his excitement leaped down to the deck to replace the hatch cover. His weight acted with greater rapidity than his muscles, the bow sinking and the vessel filling before a move could be made. Gathering in the entrapped air chamber, the men began one after another to dive below the bulkhead and emerge through an open hatch close to. Upon counting it was found that one man was missing. One of the number dove back into the entrapped air chamber, made his way aft and by groping found the missing man so terror-stricken as to be helpless. The rescuer dragged him to the air chamber, forced him into the water and under the bulkhead, and, following, brought him through the hatch and safely to the surface.

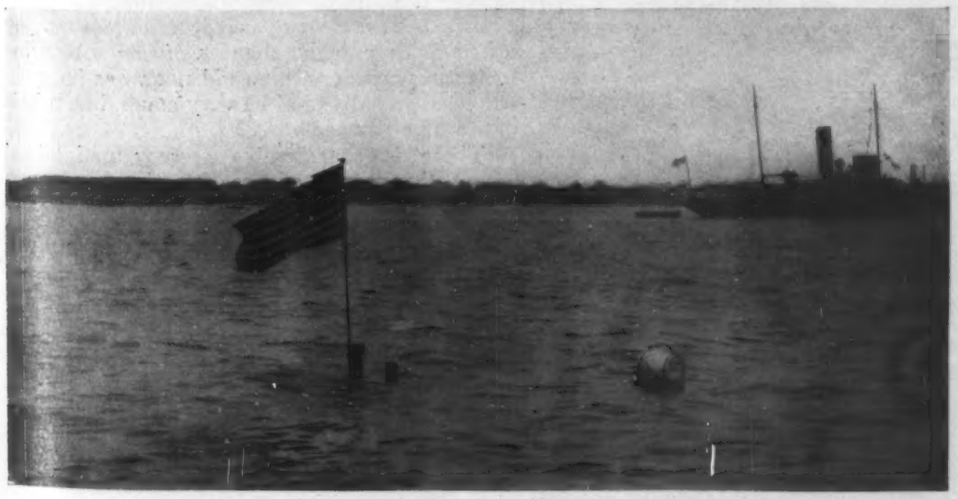


AT 12 KNOTS UNDER THE SURFACE WITH TOP OF CONNING TOWER AND PERISCOPES SHOWING.

As a last resort in the case of filling, a diving helmet that can be put over the head and fastened about the body is provided. It contains a mixture which when breathed upon emits oxygen. It has the property of absorbing carbonic acid gas. With one on a man can walk about from one to two hours and when ready to rise, by throwing off a weighted belt, will come to the surface. Then he can, by inflating a life belt attached, remain on the water indefinitely with his face peering out of a window which he has opened in the helmet to get fresh air.

When ready to dive the ship is stripped of all things movable, leaving nothing projecting excepting the masts, conning tower and periscopes. The bow and stern tanks are filled and the vessel slowly settles, the trim being observed by the masts. As she forges ahead the first impulse is to lift by the bow; the horizontal rudder is slightly depressed and she starts on the downward glide. Gradually the conning tower sinks below the surface and the periscopes are resorted to. There is always an odd sensation at the moment the water rises above the level of the eyes. When descending in diving armor the writer has also felt it most vividly.

The steering is done by electricity or by hand, usually the latter. From his station in the conning tower the man at the wheel can look into a mirror and see all that is within the range of the 35 degree angle of the periscope. This instrument enlarges 1¼ times for the purpose of making objects appear in the same proportion as to the naked eye. As the periscope may be rotated a view of the entire surroundings can be had.



LYING STATIONARY WITH ONLY THE PERISCOPES SHOWING A SUBMARINE IS PRACTICALLY INVISIBLE TO AN ENEMY'S SHIP.

The diving station (the most important post on the ship) is at the cyclometer, an upward curved level made of glass. It is a segment of a circle and is divided in the same manner as the 360-degree circle. The man stationed here handles a wheel controlling the horizontal rudder. Intently watching the bubble in the cyclometer he gives the ship an angle of two or three degrees as required and when the depth pressure gauge indicates the depth desired he deflects the rudder until the ship is on an even keel. Then, so perfectly can the manœuvring be controlled by the bubble in the cyclometer, the depth is not allowed to vary two feet, even though the vessel is traveling at a speed of 12 knots. To those who know how it is necessary to keep the wheel of a small vessel constantly in motion when steering this will seem remarkable.

Now, when you are told that at this depth an object 6 feet away is blurred and indis-

AS A SAFETY APPLIANCE THE DIVING JACKET AND HELMET ARE USED ON SUBMARINES.

DIVING HELMET USED FOR ESCAPING FROM A SUBMERGED SUBMARINE.

tinct even in the clear waters off Cape Cod, you cannot but wonder how the vessel is directed, and particularly how she can locate a moving enemy.

The methods of navigation are similar to those employed during fog or snow. In the submarine the man at the cyclometer attends to keeping a certain depth and to nothing else. The man in the conning tower does the navigating. Like the mariner on the surface he has taken a departure from a certain point. The compass tells him the direction in which he has run from the point of departure and, knowing the speed of the boat, his watch will tell him the distance traveled.

How then, when she dare not show her periscopes, yet must be alert to keep track of her own position, can the submarine locate the position of a moving enemy?

Did you ever watch a dog search for an object by the scent carried to him on the wind? He runs to one side until the scent is lost, then back through the scent until there is no trace, and so he works up the wind until his nose leads him to the object. The submarine has something as infallible and more direct than the dog's nose—its own ears. Where are they, did you ask? Deep under the water on the outside of either bow. They consist of two metallic plates, one on each side, which are in reality nothing more nor less than telephone transmitters of special design. They catch the sound waves coming through the water and transform them into electric waves, which in turn are carried through wires to the telephone receivers which the navigating officer holds to his ears. So sensitive is the apparatus that one can hear the sound of a submarine bell ten miles away.

When he wishes to locate a moving vessel the director of a submarine has but to swing the bow until the beat of the propeller or of the machinery of the other ship is brought with equal force through each of the receivers at his ears. By this he knows that the enemy is directly ahead and that nothing but accident can save it, for he is now ready to launch a machine containing within itself speed faster than anything afloat, and with the destructive power of a dozen broadsides from the heaviest of guns.

The endurance of these little submarine vessels may be judged by the fact of their making a 700-mile voyage into the open ocean to Bermuda; and their stealth by the fact that they have traversed 140 miles of our waters (from Newport to Gloucester) in which are the most tortuous of channels and a shipping greater than that of the Suez Canal, without being seen but once.

THE SAFETY DIVING HELMET AND JACKET.

With the present day naval equipment and no submarines to dread a coast could be effectively blockaded at a distance of 50 or 100 miles from the land, provided the blockading force is superior to that of the blocked. But, spread the news through the fleet that the waters are infested with a scant half dozen of these terrors, and the stoutest heart will quail.

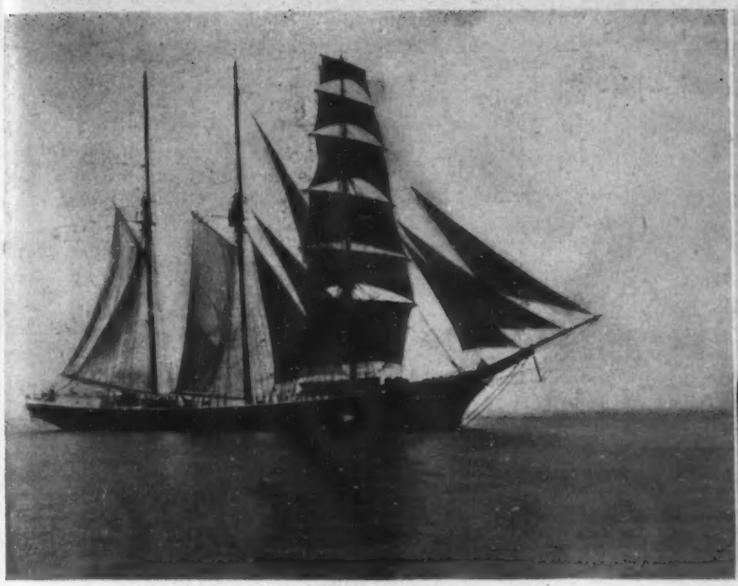
In the British naval manœuvres an attack was made by dreadnaughts, flanked by auxiliaries, on a defending force of submarines. The result was, theoretically, the complete annihilation of the dreadnaughts. Thus must it ever be between a visible and an invisible foe.

The several fatalities which have occurred in connection with submarines during the experiments of the past few years seem to have given many people an idea that these little sea fighters are more dangerous to their own crews than to the ships of an enemy, but it must be remembered that most of the accidents occurred while the present perfected type of submarine was being developed.

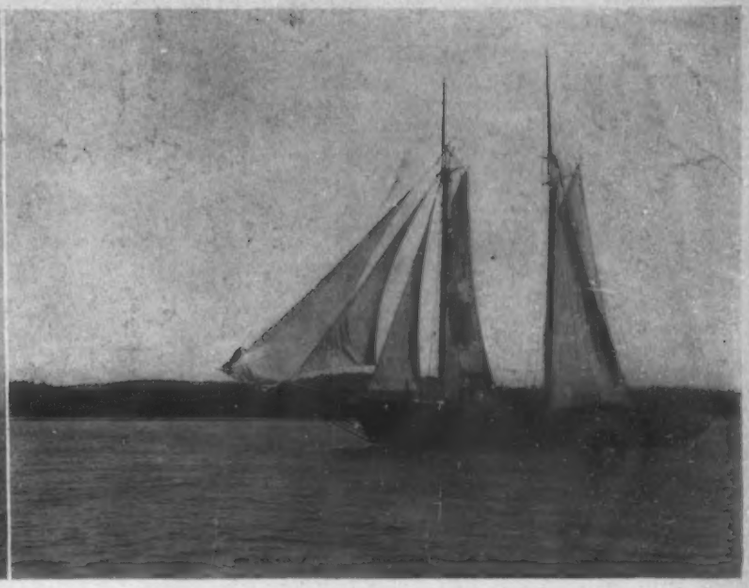
Foreign navies are believed to have experimented with sham battles between fleets of submarines, the idea being that the time soon will come when the larger ships will carry a flotilla of submarines which they can launch and use as a patrol to defend them from hostile submarines when approaching a coast or squadron of the enemy. It would seem to most of us as though the chances of one submarine detecting another which did not want its presence suspected would be very small, but this is not altogether the case.

There is considerable secrecy maintained about the nature of the detecting apparatus which is employed by a submarine in discovering the presence of an enemy under water—but we know that it can be done, within limits. No doubt the "ears" already referred to would be sensitive enough to record the disturbance in the water which would be caused by the pulsating of another submarine's propellers quite a distance away, and would also give the direction of the other craft.

In this case the victory of a general engagement will go to that squadron whose submarine fleet is able first to penetrate the cordon of the opposing submarines and reach the defenseless line of battleships and cruisers behind.



A BARKENTINE PASSED US OUTWARD BOUND.



THERE ARE WOODED HARBORS WHERE ONE FINDS NATIVE COASTING CRAFT.

Running the Nova Scotia and Cape Breton Id. Coasts

By J. T. ROWLAND

"SO long, fellows, good passage to you!" shouted our friends on shore as the little black schooner slipped away from the end of the pier. A few minutes later we had put Gloucester harbor behind us in the dark and an hour later the distant bellowing of the fog signal under "Anne's Eyes" was the sole tie between us and the coast of North America. Then it was, "Lay a course to pass clear of Cape Sables (fishermen always add the "s," whether as a plural or a possessive I have never been able to learn) and let her go—'she's the Liverpool packet Lord, God let her go,' as they used to say in the old Black Ball days—well hardly that, sir, but to the coast o' Labrador is v'yage enough for a ship as measures in inches what the clippers did in feet." Thus Larry, our official pilot, an erstwhile herring fisherman in the Gulf of St. Lawrence, hailing from T Wharf.

Next day dawned grey and placid—a light fog, a lighter breeze and a heavy ground swell from the south'ard which parted boom guys like pack thread and slatted what little air there was out of the sails. Twenty years ago we would have laid in the same hollow all day and cussed and tried to fish; but in that Year of Grace 1910 the Chief was able to start the "threshing machine" and we nosed along at a helpful little six knots as the hours slipped by.

So passed the next day, too. Then the third morning we hove to for a sounding and got bottom in 30 fathoms—gravel. This suggested the vicinity of Cape Sable. Larry put her E.N.E. and an hour later as we were preparing for a second cast the big ship-buoy on Brazil Rock suddenly loomed up broad off the port bow. A rift of clear opened toward the north, then another and another, and in wisps and trailers the fog curled itself up and vanished.

On our port quarter several miles away stood a sturdy light tower whence came still the blasts of a powerful horn—for the fog still hung thick over toward Fundy. The tower rose from the sea itself. A little to the east the Nova Scotia coast began in Cape Sable Island and stretched past us and far out of sight ahead. Baccaro Point lay abeam.

A fishing sloop came up out of the fog to seaward of us. The air was light and she drifted by close aboard.

"Where'you bound?" called Larry. "Port Latour," says a man in dripping oilers, with a wave of his arm toward the shore.

"Take our line and come aboard to pilot us in."

"Sure enough," replies he of the sailing craft with alacrity.

With the sloop in tow we run in past a long arm of forested land, the woods scent of which makes us breathe deep and often. Here the water is smooth and tranquil so that the cook assumes a more cheerful air, while oilers and sweaters are joyfully discarded.

At the head of the harbor stand a few trim little whitewashed houses with rolling hills of piney woods for a background. We anchor a cable's length from the village pier and say good-bye to our friends of the fishing sloop who, in the absence of breeze, get out a couple of long sweeps and work their craft up to the dock.

"I'm going to get one of them engines next year," shouted the skipper when we cast off their line. "Save four hours a day getting out to the fishin' grounds an' back. Lots of 'em has got 'em down this way now."

We believed him when, a couple of hours later, there came chugging up the harbor a flotilla of a dozen or more chunky little Scotia sloops, all with auxiliary power.

"The engine *is* a little bother sometimes," said one old fellow whom we talked with later, "but, Lord bless you, I'm just getting a chance to get acquainted with my family since I took to power; no more comin' in at midnight and away again by daylight, *now!*"

Next day was a succession of jutting headlands and wooded bays passed on our port hand while far out to sea would loom the occasional sail of a coaster, or nearer at hand a bunch of fishing sloops at anchor, riding out the long swells with jibs down and peaks eased off.

One Nova Scotian institution which we early came to admire was the lighting of the coast by great ship-buoys similar to our harbor gas buoys but much larger, so that the lens is 15 or 20 feet above the water.

These buoys are provided with a whistling attachment actuated by wave action and are near enough together so that in foggy weather there is no difficulty in picking them up, one after another, as you run down your course. We shut down the engine to listen for one early on a thick morning and then were not able to get the pesky "bunch o' junk" started again. Examination showed that the piston was stuck fast in the cylinder—but let us draw the curtain before such troubled scenes! The wind was light but fair and it seemed good for a change not to have

AT THE HEAD OF THE HARBORS STAND TRIM LITTLE WHITEWASHED HOUSES.

your teeth chattering through sympathetic vibration as you sat on the wheel box steering.

Halifax Harbor is a delight, all but the docks, and they are—well, like docks the world around. We had to lie 'longside of one to have repairs done to the engine and in the space of two days had tracked enough coal and dirt below to shock the æsthetic sense of the crew of a Norwegian tramp—which is saying considerable.

From Halifax to Cape Canso at the east end of 'Scotia the coast is more intimate; there are fewer large bays, but the nearly straight general coastline is very much indented with smaller harbors and river mouths. Jeddore, Sheet Harbor, Whitehaven and so on—quaint, delightful little ports which tempt one to linger. Occasionally it is possible to pass inside of some islands and gain thereby a diversity of scene. "It's the Maine coast only more so"—as one of the fellows put it.

Then, too, the eastern end is supposed to be freer from fog. I have been along there several times in July and August without ever being seriously inconvenienced by this demon which so many people automatically and instantly conjure up when one mentions 'Scotia. Truly a bad name is more easily acquired than got rid of.

Arrived at Cape Canso, the northward bound voyager has choice of several routes. He may pursue his way further east around Cape Breton and pass into the Gulf of St. Lawrence through Cabot Straits; he may turn directly north, and after crossing Chedabucto Bay run through Canso Gut, the narrow strait separating 'Scotia from Cape Breton Island; or he may run up N.E. for Madame Island and pass through St. Peter's Canal into the beautiful Bras d'Or Lakes which occupy the heart of Cape Breton Island—like a hand with fingers outstretched set down upon the map. One of the fingers communicates with the ocean to the east some 20 miles north of the Sydney mines. This brings you out to sea past the Bird Rock, where literally millions of gulls have their nests.

We are running now along the south side of the long eastern point of Cape Breton Island terminating in Cape North, pointing towards the Newfoundland coast. It is a high, virtually primeval shore, densely wooded with pine and other conifers and said to be rich in game. As to that I do not know but the waters at any rate surely are productive; the finest lobsters in the world come from here, by way of the little canneries perched on the beaches of occasional harbors. We captured a bushel or so (already cooked) at Ingonish well above high water mark, with a Canada quarter for bait. Near Ingonish is Old Smoky, and a well-named headland it is for its dignified summit is usually shrouded in heavy clouds which seem to collect from out of newhere,—even when all the rest of the sky is clear. On the morning we passed Smoky he frowned down at us with exceptional sullenness for the day was overcast with a light air from the east, and a glass at 28.50. When the little ship dropped into a trough of the great ground sweil all the land would be shut from view save the top of Smoky and its dense pall of low vapors. Later, out in the open gulf, we learned what was behind Old Smoky's frown—but that is a story by itself.

Really the shortest way to get north from the south coast of Nova Scotia—though not quite as picturesque as by the Bras d'Or Lakes—is through the Gut of Canso, once mentioned. The tide runs swiftly so that a sailing vessel has a hard time of it with both wind and current ahead, but the Gut is wide enough for effective tacking; if either element is favoring the passage is negotiable.

At the far end one comes out upon St. George's Bay which is but a corner of the Gulf of St. Lawrence. For a while, then, you trim the north coast of Cape Breton Island, high and bold, but by reason of its position less wooded than the southern.

On one occasion which is writ large in my memory we—that is to say, a 35-foot schooner, six men and a malodorous kicker—had been rambling along the Cape Breton shore in anticipation of a run across to Newfoundland. Cape North saw our good ship's stern one day shortly after sun-up as she bobbed and splashed and chugged her way through the tide rips of Cabot Strait, which is some 60 miles wide in the narrowest place. We were headed about N.E. for the neighborhood of Cape Anguille, Newfoundland, so it was not long before St. Paul Island loomed large ahead. If you look at a map of Nova Scotia you will see that the island in question is a little lump of red which forgot to be included in the main land, relatively speaking, of Cape Breton Island. It lies about 12 miles off from Cape North in the Gulf of St. Lawrence.

Once through the tide rips with everything serene I went below for a morning "caulk" and was soon immersed in that unpleasant, groggy slumber which is born of a hot cabin, an uneasy motion and thick kerosene fumes.

Then came an apparition which seized an unoffending arm and shook it roughly. I dragged my eyes open and accomplished the herculean task of sitting up. The apparition was Larry. He shook me once more and threw some water in my face. "Man, you're fair doped!" he said. "Come up—it looks dirty."

I straggled aft behind him and up onto deck. A blast of cold air quickly cleared my head. The clouds which had lain dank and oppressive all morning were now gathered in a solid bank to the east, the upper edges hard and greasy looking. Overhead some light scud was tearing from the west and the horizon to the north'ard had a metallic, polished sheen.

"Look at the glass," quoth Larry tersely.

OFF SHORE AN OCCASIONAL COASTER SPED PAST.

SAMBRO LIGHT, NOVA SCOTIA.

HALIFAX FROM THE HARBOR.

I did. It had been unusually low all morning—even for that region of normally low glass. Now I saw that the needle had gone up a tenth and a fraction above the "set."

"When did she start?" I asked.

"'Bout an hour ago."

"*Good night!* Let's take the mainsail off her while its here to take."

"Right y' are! And I'll get out on that bloomin' nose-pole and bob up the jib before she's playin' at submarine boat," says Larry.

We soon had her snugged down, yet with only foresail and jumbo there was breeze and to spare. St. Paul Island bore dead to windward and was still some miles away.

"There's nary harbor there but a small little cove the Newfoundland Jacks sometimes anchors in; it *might* serve us, bar a shift o' wind," Larry informed me. We were steadily but slowly decreasing the distance to the island, and the wind was steadily but not slowly increasing its weight.

"'Tis a rare breeze. An hour earlier startin' and it would never have let us get here," quoth Larry when at last the lee of five miles of land began to be perceptible. At length there were only the sharp puffs off the hills to contend with, barring a quick slinging little cross chop that was not enough to stop us any. We ran in and anchored in a semi-circular bight on the east side of the island while around us lay a fleet of little fishing schooners from Newfoundland, moored bow and stern—the "Jacks" Larry had referred to.

The Gulf was white as far as one could see all next day but our haven remained secure. Then on the second morning it was "up hook" and away for the coast of Newfoundland.

How to Run a Successful Club Race

ONE of the most difficult problems that the regatta committee of a motor boat club is up against is to find some easy and satisfactory method of handicapping boats of different types where they are raced together, as is often necessary owing to the diversified character of the club fleet, and the inability of getting together enough boats to fill any one class. A rating rule requires the measurement of the boats, while the previous performance basis requires a certain amount of data gathered in past races or necessitates sending the boats over a special measured course.

The regatta committee of the Hudson River Motor Boat Club found one way out of the difficulty and we are indebted to the chairman of the committee, Mr. F. W. Pratt, for describing it for the benefit of YACHTING readers and members of other clubs who may have felt the hopelessness of the situation above described.

He says:

"One of the most perplexing problems encountered by the smaller motor boat clubs is that of holding successful club races that will give every one an equal chance to win. Racing is interesting when the contest is close, and very unsatisfactory where you have one or two boats that are sure to win in every race.

"In order to place all boats on an equal basis, handicapping is, of course, the only solution; and the question at once arises as to how you can handicap a speed or semi-speed boat against a cruiser, auxiliary or small open boat.

"No doubt there are many small clubs that could increase their membership and build up a much more active organization were they able to run a series of interesting and equitable races during the summer open to club members only. In an effort to solve this problem the Hudson River Motor Boat Club recently held club races in which all types of boats were represented. The regatta committee, composed of Mr. A. Haas, Mr. W. J. Stewart and the writer, figured out a system of handicapping, and for the benefit of other clubs will give the results of these races.

"The first race was called at 2.20 P. M. with a two minutes preparatory signal. The course was an equilateral triangle of about one mile and a sixteenth for each leg (length of leg optional with committee), the start being directly in front of the clubhouse. At the starting signal seven boats crossed well bunched, the Maseba, a hunting cabin boat, in the lead. The Florence, a sixteen-foot open boat, was second; the Nellie, an open boat, third, followed by the Gray Hare, one of the fastest open boats on the river, after which came the Roxana and Whippet, both speed boats, and last the open boat Anadora.

"In figuring winner for the afternoon the committee decided to run three distinct races. In each race the winner was to receive one point, second boat two points, third boat three points, fourth boat four points, and so on down according to their position at the finish. The first two races were twice over the triangular course with the third and final race only once over.

"In order to determine the handicap, the committee, who were on the stake boat, took the time of the boats as they went around the course, figuring on a certain distance covered, and based their handicaps on this time. When the boats started their first race, all were started together and no one knew on what leg his time was to be taken which was to figure in the handicapping. By pursuing this course the committee could then get a very close line on the actual speed the different boats were making; and as the boats themselves were anxious to win the first race and ignorant as to where the handicap time was to be taken from, they would not take a chance on holding back. By taking the handicaps while the race is in progress the committee could figure out the allowances of the different boats, and when they returned to the clubhouse from the stake boat at the finish of the first race could not only post the winners of that race, but at the same time post the handicaps of the second race, which was started as soon as convenient after the finish of the first race.

"The winner of each race was to have three minutes de-

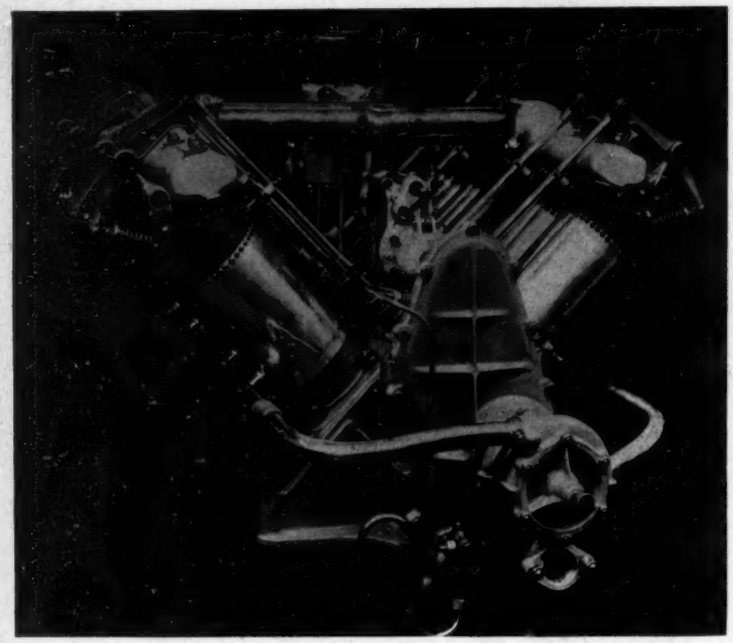
(Continued on page 124)

The British International Trophy Challengers

The Boats from Which the English Team Will Be Selected. America Likely to Secure Another Win at Huntington

FROM OUR LONDON CORRESPONDENT

ALTHOUGH England will probably send a full team again to Huntington for what has come to be an annual contest for the British International Trophy, it does not seem likely that the defending boats need have any fear of not being able to retain the cup which Dixie IV secured last August, provided they can show each day an average speed of 38 knots round the 30-mile course. At the time of writing there does not seem any likelihood of Pioneer being entered by the Duke of Westminster, as her engine is still in the displacement boat Ursula. This leaves as the most formidable challenger Mr. E. Mackay Edgar's 600-H. P. hydroplane Maple Leaf IV. But unless she shows up better than her pitiful performance last year she need



THE ENGINE OF THE MARQUIS OF ANGLESEY'S CHALLENGER MONA.

not greatly be feared. We say pitiful because she crossed the "Pond" with a record of over 50 knots, and succeeded in averaging about 32 knots and then broke down. However, it will be remembered that in the July, 1911, issue of YACHTING I stated that it was doubtful if she would stay the course, and such proved to be the case.

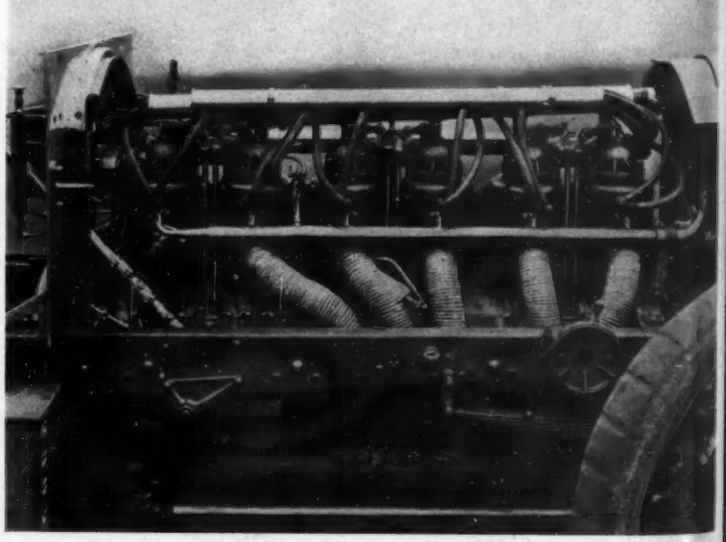
But during the winter Maple Leaf has undergone considerable alterations which practically make her a new boat. Her engines, where probably all the trouble lay, have had new cylinders fitted by the Austin Motor Co., and a new hull, 40 feet by 9 feet, of the Saunders-Fauber type has been built by Sam Saunders, of Cowes, so she should, and it is to be hoped she will, put up a much better fight this time. She may, of course, prove to be a dark horse. Unfortunately a promising little challenger, Fred May's 27-foot by 5-foot hydroplane Defender III, has met with a serious accident to one of her 60-H. P. engines, which were of the light aeroplane type, and the damage is so serious that it can not be made good in time for the elimination trials. It is very regrettable as the boat has been constantly under trial since she was built last autumn.

Three entirely new boats have been specially built for the B. I. trophy race, for the Marquis of Anglesey, Mr. Dan Hanbury and Mr. N. C. Neill. Of these Mr. Hanbury's Silver Heels is the most promising and is said to have a very high speed; but she probably has too many units for her engineer to attend to, as there are six four-cylinder engines installed. Mr. Hanbury owned the Thornycroft hydroplane Zigorella, a competitor in the 1910 contest. His new boat is also a Thornycroft hydroplane, 33 feet long by 7 feet beam, built by the Hamble River, Luke & Co., of Hamble, Hants.

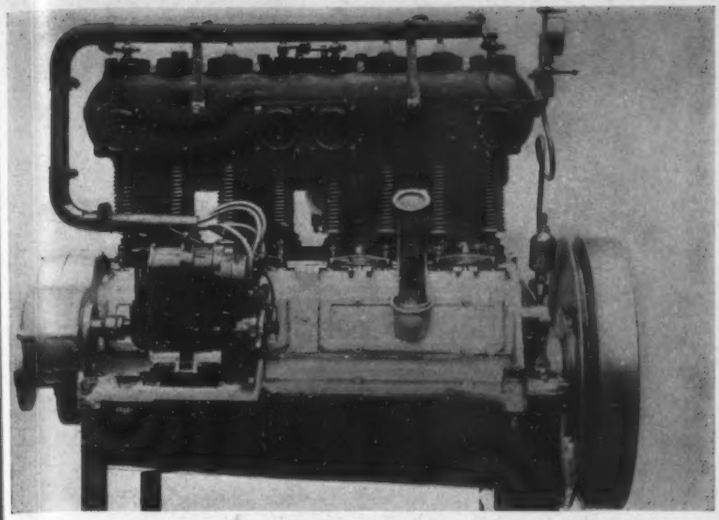
Her propelling machinery consists of six four-cylinder Vauxhall engines, each having a bore of 93 mm. by 146 mm., developing 55 B. H. P. at 2,100 revolutions per minute. But the engines can be run at 2,350 R. P. M., at which speed 72 B. H. P. is developed; so it will be seen that the machinery is capable of developing 432 H. P. Therefore, when doing her best she should be able to touch 40 knots without difficulty, the weight of each engine being only 440 pounds. However, to keep twenty-four cylinders turning at well over 2,000 revolutions per minute over a 30-mile course two or three days in succession requires wonderful reliability, especially should the water be at all loppy. Here lies what will probably prove to be a fault in the design, there being too many high-speed units. Vauxhall engines have given splendid reliability in car races; but the marine problem is another matter, as strains and stresses are set up which are not met with on land.

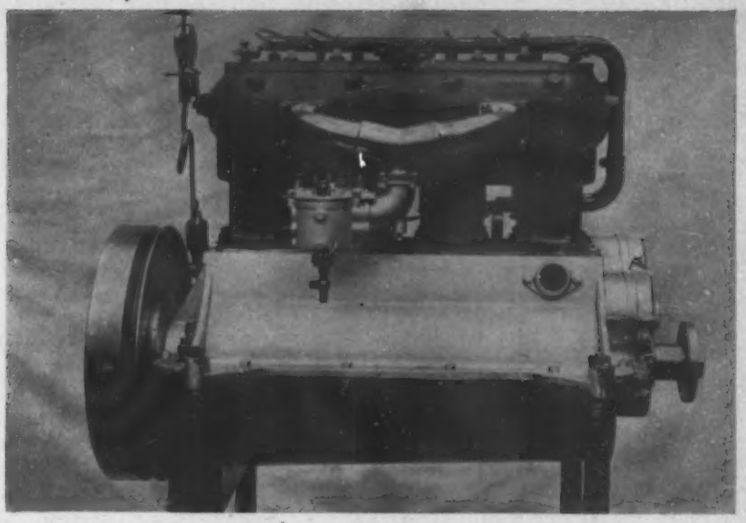
With regard to the arrangements the engines are coupled in pairs, driving three screws, and each pair is staggered. The cylinders of each engine are cast en bloc with the valves all arranged on the port side, and are of the ordinary poppet type, being actuated by cams and tappets in the usual manner, but the cylinders are off-set from the crankshaft. This eliminates side-thrust on the cylinder walls on the down stroke. High-tension magneto ignition and forced lubrication is fitted, the oil pressure varying from 5 to 50 pounds per square inch, according to the engine speed. An indicator with a large disc is fitted at the after end of each engine.

The boat for the Marquis of Anglesey is also of the Thornycroft type with the single step, designed and built by Morgan, Giles and May, of Southampton, under license. Mona, as she is



A NAPIER ENGINE SIMILAR TO THE ONE INSTALLED IN MR. NEILL'S CHALLENGER MILMAR.





PORT AND STARBOARD VIEWS OF ONE OF THE SIX VAUXHALL ENGINES OF MR. HANBURY'S CHALLENGER SILVER HEELS.

named, has a triple-skin mahogany hull on bentwood frames, 26 feet in length by 5 feet 9 inches beam, and is fitted with a Wolseley V-type areo engine nominally of 120 H. P., but which develops 140 B. H. P. at about 1,300 R. P. M. on a weight of 750 pounds. The makers have guaranteed the engine to develop continuously not less than 120 H. P. when running at 1,150 R. P. M. As the boat has a weight complete of one ton, about 33 knots may reasonably be expected, although I understand that Mr. Batting, the supervisor, hopes to get well over this speed.

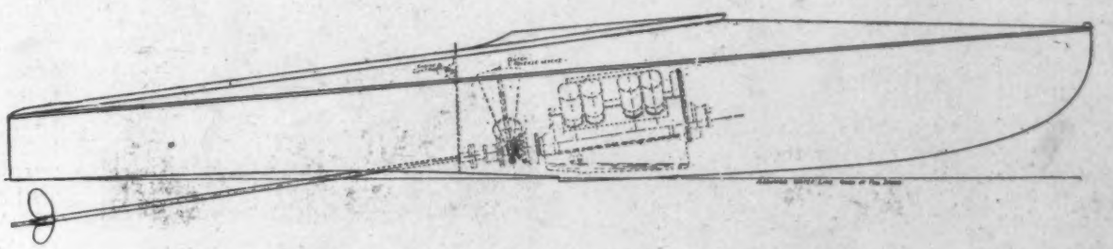
The Wolseley engine has eight cylinders, cast separately, arranged V-wise, with a bore of 5 inches by 7 inches stroke. Carbon steel liners are fitted to the cylinders, and spun copper water jackets are provided. A study of the illustration will reveal that both the inlet and exhaust valve of each cylinder are operated by a single rocker mounted on the head, and actuated in turn by a cam and a push rod from a cam shaft arranged in the apex of the cylinder. A carbon shaft driven from the cam shaft by a pinion operates the high-tension magneto which, like the carburetor, is really arranged between the cylinders. Lubrication is by force feed and by splash. Wolseley engines, it will be remembered, are fitted in the Duke of Westminster's racers Ursula and Pioneer.

It seems as though all the challengers with the exception of Maple Leaf IV will be hydroplanes of the Thornycroft type, as Milmar, the third boat especially built for the race, will likewise be of this design. Her owner, Mr. N. C. Neill, is a well-known racing car enthusiast, which probably accounts for the fact that an automobile engine is installed. Built by Dixon Bros. and Hutchison, of Woolston, she is 27 feet long by 6 feet 4 inches beam, and her engine is a six-cylinder Napier capable of generating 180 B. H. P. continuously, though as much as 215 H. P. can be gotten out of it.

Regarding the hull, the sections of the underbody are of a combined V and U form with a reverse curve at the bilge. The engine bearers run from end to end, and are lightened where possible without sacrifice to strength. They are rabbeted into the stem and connected to the transom by a brass plate. Her timbers are of closely spaced American elm, of very heavy scantling forward of the step where the pounding strains are heaviest. The planking is a double skin of mahogany, the inner skin being diagonal. The forward part of the underbody is of four skins, the after ends of which form the step. Her sections forward show a considerable flare, and she has a big tumble-home aft, continuing to within about 6 or 7 feet of the stern. Just aft of the engine a bulkhead extends right across the boat, which will give additional stiffness. A heavy beam extends across the top of the bulkhead from side to side which is fastened with oak knees, and serves to carry the steering wheel and various engine controls. The clutch and reverse levers will be within easy reach, so that the boat can be run without difficulty single-handed, and the engineer will be able to give the whole of his attention to the engine.

Turning to the Napier engine, there are six cylinders 6⅛-inch bore by 8-inch stroke and its weight is about 980 pounds. This brings the weight of the complete boat to 1¼ tons. It is of the four-cycle type, as are all the engines mentioned here, and the cylinders are cast separately and are provided with copper water jackets. The engine is of the ordinary vertical type with the exhaust valves on the starboard side operated by cams and tappets; but the inlets are mounted in the cylinder heads and are actuated by rockers and push rods off the same cam shaft. Lubrication is on the pressure feed system, the crankshaft and webs being bored, but the gudgeon pins are lubricated by splash. To the cylinder walls, however, there is an extra feed, served by castor oil, which lubricant has been found the best for high-speed engines, and is largely used for aeroplanes. The carburetor is provided with two float chambers, in order that the rolling of the boat may not affect the fuel feed. Dual magneto ignition of Bosch make is fitted, each magneto having its own set of sparking plugs. A solid Thornycroft three-bladed propeller on a chrome nickel steel shaft is driven through a special clutch and a rope and jockey pulley type reverse gear, the latter being to comply with the rules of the trophy race. The clutch is so designed that there is just sufficient friction surface to take up the drive before the dog clutches come into action.

From the foregoing it will be gathered that there is nothing remarkable about any of the new challengers, and unless Maple Leaf IV shows better form this year it is quite possible that America will secure another win, given, of course, no ill luck at the last moment.



PROFILE OF THE MARQUIS OF ANGLESEY'S CHALLENGER MONA.

THEY ARE OFF FOR ALBANY IN A BUNCH.

The New York to Albany and Return Race

THE motor boat record from New York to Albany and return, a distance of 235 nautical miles, was lowered by 24 minutes in the race for boats of under 40 feet rating which was started from the foot of 147th Street, New York, at 10 o'clock on June 29th under the auspices of the New York Motor Boat Club.

While the time prize went to Thistle, a 40-foot over-all cruiser owned by J. H. Wallace of New York, which made the round trip in the record time of 27 hours, 30 minutes and 25 seconds, the race was won on time allowance by V. C. Pedersen's Respite with a handicap of 6 hours 3 minutes and 18 seconds.

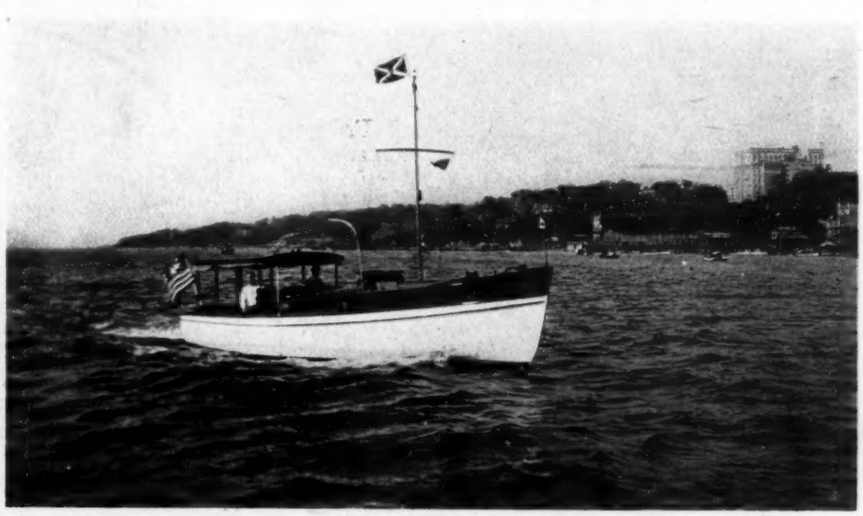
Second prize went to Marinette, owned by H. B. Freeman, which enjoyed a time allowance of 5 hours, 10 minutes and 35 seconds; and third place was captured by G. Moore's Narcissus with an allowance of 6 hours, 31 minutes and 40 seconds. The Thistle finished at 1:30 P.M. on the 30th, and it was 7:37 before the game little Marinette reached the line.

In the class for open boats only one of the three starters finished the race. This was the Bunk III, C. Firth, owner; which finished at 3:22 P.M. on the 30th, making her corrected time 23 hours, 22 minutes and 32 seconds. W. B. Selden's Merlin, which was the allowing boat in the class, withdrew early in the race —as likewise did F. W. Heinig's Katherine—a little fellow with a two horse-power engine and an allowance of over 22 hours.

On the run north the racers ran into some sloppy weather—a heavy storm in the afternoon and squalls during the night. The wind was ahead practically all of the time. Off Catskill the Oeyesee, owned by J. Smith, ran aground and had to withdraw, while H. Magler's Louise was disabled with a broken crank shaft.

THE SUMMARY.

CLASS A—CRUISERS. START, 10 A.M. SATURDAY. Boat and Owner.	Albany Turn. H.M.S.	Finish. H.M.S.	Corrected Time. H.M.S.
Respite, V. C. Pederson	2:06:10	4:41:30	24:38:1
Marinette, H. B. Freeman	2:21:00	5:47:36	26:37:0
Narcissus, G. Moore	4:00:18	7:37:03	27:05:2
Thistle, J. H. Wallace	12:35:05	1:30:25	27:30:2
Kid II., C. H. Dugliss	3:50:30	9:23:00	27:59:3
Arlington, J. Clipper	3:43:08	8:43:45	28:25:0
Mistake, H. Gillis	4:33:05	9:42:15	28:44:0
Debut, R. Naschman	3:23:10	7:46:01	29:01:0
Bathurst, R. F. Nolley	3:45:05	7:45:54	30:13:0
Lillian II., L. Walters	4:17:12	8:51:15	30:20:0
Rosina, H. Nelson	3:04:30	Disabled.	
Oeyesee, J. Smith	Disabled.		
Louise, H. Magler	Disabled.		
Ivanhoe, R. G. Morris	Withdrew.		
Ouida, F. E. Menke	Withdrew.		
CLASS B—OPEN BOATS.			
Bunk III., C. Firth	12:35:08	3:22:42	23:22:3
Merlin, W. B. Selden	Withdrew.		
Katherine, F. W. Heinig	Withdrew.		

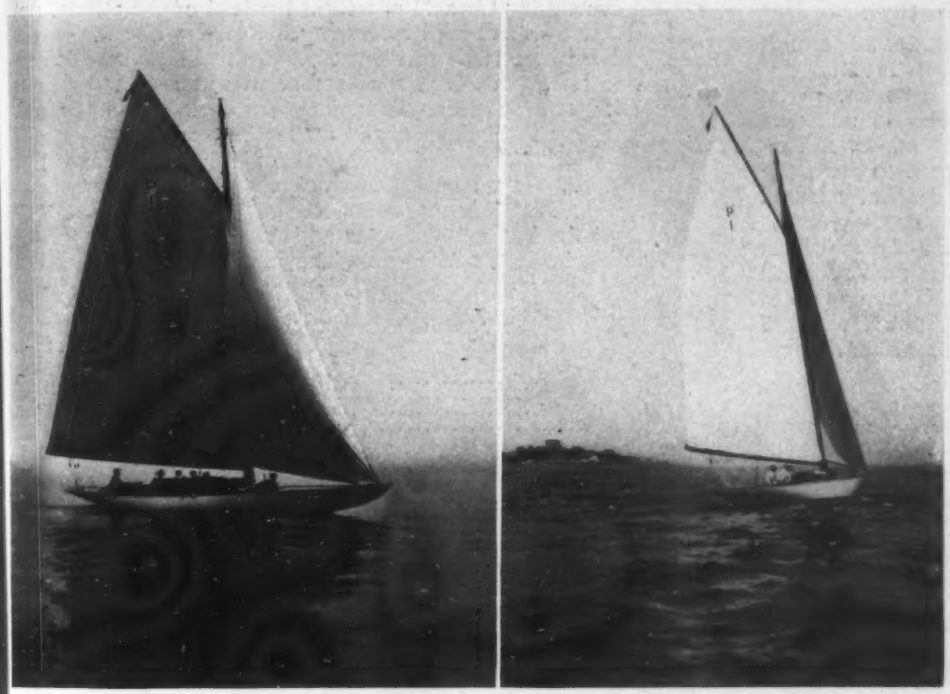


RESPITE, WINNER OF FIRST PRIZE ON CORRECTED TIME.

The Manhasset Bay Cup Goes to Chicago

The New Boat of the Chicago Yacht Club Takes the Famous Trophy to Lake Michigan

IT is doubtless a source of great satisfaction to Chicago yachtsmen that the new boat built by members of the Chicago Yacht Club captured the trophy which stirred up so much trouble last year in the first series of races in which she participated. It is not only a feather in "Billy" Gardner's cap that Michicago captured the Manhasset Bay Cup, but it augurs well for the chances of the new boat in the international series against Patricia to be sailed on Lake Michigan in August.



MICHICAGO, THE NEW SYNDICATE BOAT OF THE CHICAGO YACHT CLUB WHICH TAKES THE MANHASSET BAY CUP TO FRESH WATER.

It looked for a while just before the start of the series as if the unpleasant mixup of last year over this cup was to be renewed, as on the eve of the series announcement was made by one of the committee in charge of the race that the American Yacht Club had protested Corinthian, Sayonara and Joyant, while Amoret and Italia had withdrawn from the series, leaving only two boats in the race, Cara Mia and the new boat representing the Chicago Yacht Club—Michicago. Corinthian and Sayonara were protested on account of rating, practically on the same ground as the protest of last year, and Joyant for not having entered in time. In view of all that has gone before it would have been a pity if the American Yacht Club had persisted in its stand, but it eventually withdrew the protests, waived all scantling and other rules and allowed all of the boats that were on hand to race. These boats were the following: Corinthian, Seawanhaka-Corinthian Yacht Club, the original challenger; Joyant, representing the Indian Harbor Yacht Club; Windward, Larchmont Yacht Club; Michicago, Chicago Yacht Club, and the defender, Cara Mia, American Yacht Club.

The series consisted of three races, the first and third being over a windward and leeward course of four miles to a leg, sailed twice over, a distance of 16 miles; while the second was a triangular course of ten miles sailed twice over—a total distance of 20 miles.

The first race was started Monday, June 24th, with a moderate southwest wind and smooth water. The yachts were started off Great Captain's Island at 1.40 P. M., the first leg being a beat dead to windward to a mark off Parsonage Point. The five boats got away to a good start, being well bunched, but the Corinthian at once split tacks with the others, standing to westward on the port tack, and soon worked out a lead which she lost later, however, when the wind fell light.

Michicago, sailed by Harry Johnson and Jimmy Sparkman, sailed a beautiful race, completing the first round of eight miles in 1:22:03 and leading Corinthian, sailed by H. C. Smith, by 7 seconds. The five boats fought it out foot by foot on the second round, with the outcome always in doubt until the finish, when the Chicago boat crossed the line two minutes and 15 seconds ahead of Joyant, the latter boat being only 9 seconds ahead of Windward. Only five minutes separated the first and the last boat in the race. In this race the new Gardner boat had shown herself to be remarkably fast both in turning to windward and running under the conditions which prevailed.

Summary of the first race:

Yacht and Club.	Finish. H.M.S.	Elapsed Time. H.M.S.
Michicago, Chicago	4:17:11	2:37:11
Jovant, Indian Harbor	4:19:26	2:39:26
Windward, Larchmont	4:19:35	2:39:35
Cara Mia, American	4:21:11	2:41:11
Corinthian, Seawanhaka	4:22:23	2:42:23

The second race was sailed the following day, June 25th, under very nearly the same conditions of wind and sea as on the previous day. The course, however, was a triangular one, the first leg being from Great Captain's Island to Matinicock buoy,

ROUNDING THE COMMITTEE BOAT. LEFT TO RIGHT, JOYANT, MICHICAGO, CORINTHIAN AND CARA MIA.

dead to windward; the second to Oak Neck buoy, a broad reach, and the next leg another reach to the starting line. The boats started at 1:10 o'clock with Cara Mia, sailed by Stuyvesant Wainwright, in the windward position. All crossed on the starboard tack, but Michicago at once tacked to port to get clear of Cara Mia and Windward, by which move she improved her position. It was close windward work across the Sound between the five boats and they turned the first mark in the following order:

Yacht and Club.	Finish. H.M.S.	Elapsed Time. M.S.
Joyant	2:04:36	54:36
Cara Mia	2:04:40	54:40
Windward	2:05:08	55:08
Michicago	2:05:22	55:22
Corinthian	2:06:21	56:21

Joyant was 4 seconds ahead of Cara Mia and the latter 28 seconds ahead of Windward, the latter being sailed by R. A. Monks.

On the run to Oak Neck ballooners and spinnakers were set and Joyant increased her lead, rounding the second mark 22 seconds ahead of Windward. On the second round, E. Burton Hart, sailing Joyant, went off alone on a long tack to the westward, while the other boats stood over toward the Long Island shore. Joyant gained by the move, however, as she rounded the windward mark on the second leg 34 seconds ahead of Michicago; this lead she held to the second mark, and on the final reach to the finish increased it materially, finishing some five minutes ahead of the Chicago boat, which was in the second place, 3 minutes 39 seconds ahead of Cara Mia, the Windward having dropped back to last position.

Summary of the second race:

Yacht and Club.	Finish. H.M.S.	Elapsed Time. H.M.S.
Joyant, Indian Harbor Y. C.	4:49:24	3:39:24
Michicago, Chicago Y. C.	4:54:53	3:44:53
Cara Mia, American Y. C.	4:58:32	3:48:32
Corinthian, S. C. Y. C.	5:02:42	3:52:42
Windward, Larchmont Y. C.	5:07:27	3:57:27

The result of this race left Joyant and Michicago tied for first place with nine points each, and the outcome of the match was dependent upon the third day's racing. When the boats came to the line on June 26th, the wind was so light that the start was postponed for half an hour, and even when they started the breeze was the slightest zephyr from the S.S.W., the course being the same as the first day—four miles to windward and return, to be sailed twice over.

Soon after the start Cara Mia made a long tack to the westward in anticipation of getting the first of the flood tide, which she soon did, and then tacked to the southward, opening up a long lead which she maintained throughout the race. She was first at the windward mark, and at the end of the first round led Windward by over 7 minutes and Michicago and Joyant by about 11 and 12 minutes. The struggle for the cup, however, was between the last two and it made no difference whether or not Cara Mia won as far as keeping the cup was concerned.

On the second leg Cara Mia, well in the lead of the others, not only held her own but kept increasing her lead, while far to the rear Michicago kept well in front of Joyant. Stuyvesant Wainwright was sailing his boat for all that was in her in the light breeze and, first around the windward mark on the second round, he set spinnaker and ballooner and made a procession of it to the finish line, which he crossed 8 minutes and 14 seconds ahead of Windward, the second boat. Michicago and Joyant picked up some on this round but the former was 15 minutes and 40 seconds and the latter 16 minutes and 55 seconds astern of the American Yacht Club's defender. The following are the finished and elapsed times of the boats with the total number of points scored in the series by each:

Yacht and Club.	Finish. H.M.S.	Elapsed Time. H.M.S.
Cara Mia, American Y. C.	4:49:06	3:09:06
Windward, Larchmont Y. C.	4:57:20	3:17:20
Corinthian, S. C. Y. C.	5:01:52	3:21:52
Michicago	5:04:46	3:24:46
Joyant, Indian Harbor Y. C.	5:06:01	3:26:01

The points scored were: Michicago, 11; Joyant and Cara Mia, 10 each; Windward, 8; Corinthian, 6.

It is to be hoped that Eastern yachtsmen will not let the dust gather on this cup, which has stood for so much in Eastern yachting, but will send a boat after it next season. The cup stands for competition in a class which is one of the best that has ever been formed, and the ends of the sport would be served by keeping alive competition, particularly now that it would involve racing against another section of the country.

From New York to Shelter Island by the South Shore

An Interesting Motor Boat Cruise Down Long Island's South Shore, Through the Sheltered Bays and Canals

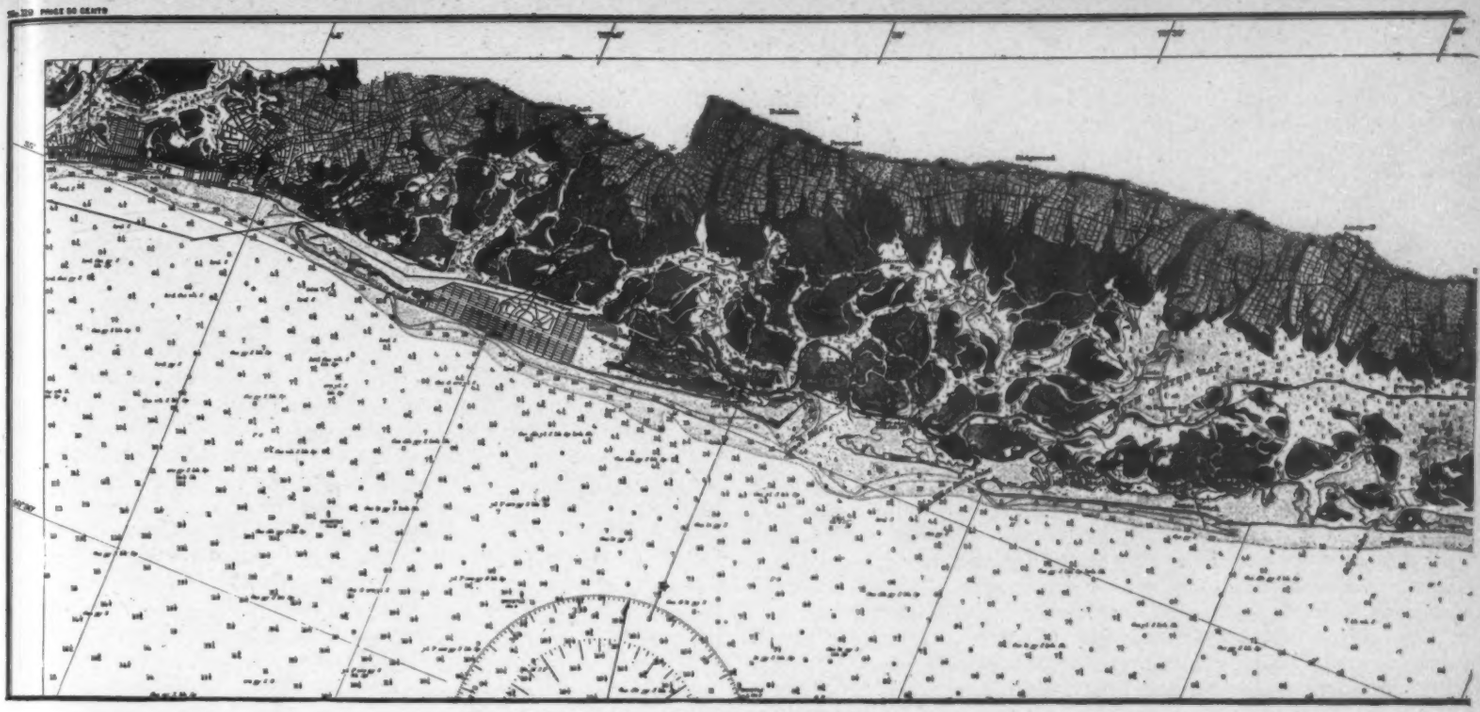
By GERALD T. WHITE

ALMOST every Eastern boatsman has cruised Long Island Sound, but very few have undertaken the trip inside of the long strip of beach that protects the various bays on the south shore of Long Island from the ravages of old ocean. For that reason I made up my mind to go over this route last summer. I did so, and enjoyed it so much that I have written this is in the hope that it may help some other enthusiast to find a new cruising ground, by showing how practical the route is for power cruisers.

With but one exception, I have never seen any complete description of the waterway from Shelter Island to New York along the South Shore. The one story I read was of more interest to the man looking for a summer home than to the cruising yachtsman, as it was descriptive of the towns, their Indian names, and other real estate items. In this article I am going to try and keep away from dry land as much as possible, and tell about the depth of the waters and other information that will be more interesting to a sailor than a seeker after summer resorts.

The boat we had was a thirty-foot cruiser, fairly comfortable but having a draft of nearly four feet—a tremendous amount of keel to drag over the bars of the Great South Bay; but as we were looking for a little more excitement than accompanies the usual cruise we determined to risk it. At the same time I would not advise anyone to attempt the trip with a boat drawing more than three feet unless he likes to hang on a bar (a sand bar I mean) half the night and get up in the "wee sma' hours" at high tide to kedge the boat off. Sailing for most of the time and going aground occasionally is not so bad; but when you are aground for most of the time and sailing only occasionally it becomes tedious, to say the least. So, as I said before, don't draw more than three feet, and you will be in the first classification, sailing most of the time. There are places where you will need every inch of water that there is in the bays, and getting out of the channel will mean hitting bottom; but as there are no rocks in the bay there is no danger of injuring the boat even if you do scrape once in a while. Reversing the engine for a few minutes will get you off ninety-nine times out of a hundred. The hundredth time you wait for the tide.

The entire trip from New York to Shelter Island can be made in sheltered water with the exception of a stretch from Gravesend Bay to Long Beach Inlet, a distance of not much over ten miles. This little run should not worry any one as there are several places in which you can find shelter along the way, and I have made it several times in an eighteen-foot boat that was about as seaworthy as a colander. In summer there is no cause for anxiety as the trip is about as exciting as fishing for flounders.



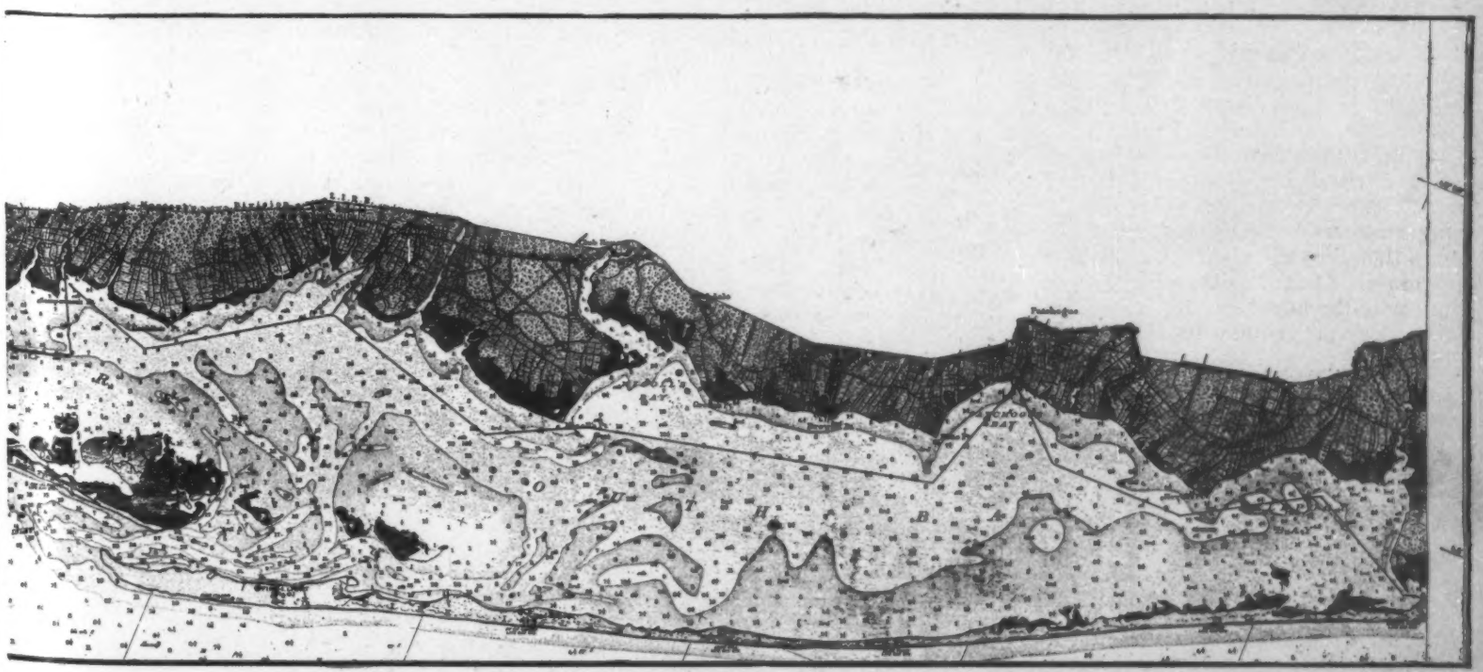
FROM LONG BEACH TO BABYLON.

The course from Gravesend Bay leads first outside of Coney Island, rounding the lighthouse on Norton's Point, and takes you past Sheepshead Bay, Jamaica Bay and Rockaway Beach. Long Beach Inlet is marked with a black and white channel buoy. Head directly in from the buoy, passing it close by. The entrance to the channel is very deceptive as it looks as if there was a line of breakers extending clear across. These can be easily run, however, with anything from a canoe up. If you feel "scarey" about running in you can wait outside until one of the fishing boats that are constantly going in and out comes along, and follow it.

After passing through the inlet the course leads E.¾S. up what is known as Reynolds Channel. About 2½ miles up the channel will bring you to a bulkhead on the starboard hand. Run in rather close to this bulkhead as the best water is on the south side. After passing under the railroad bridge your troubles will commence, as the water begins to shoal, and many islands will be seen. The course through these island channels is so devious that it will be absolutely impossible to give all the compass courses. Reference to the charts reproduced in connection with this article will show the best way through. In making the trip, however, one should have aboard charts numbers 118, 119 and 299, which will cost only $1.25 for the three, and should trace the courses here shown upon them.

The greatest difficulty will be found in locating yourself among the islands, as they all look alike; but if you keep careful watch to the southward you can see the life-saving stations on the outer beach and can check them off. In this way you will be able to follow the course shown without any trouble.

When once out of the maze of islands you can run well up to South Oyster Bay, keeping about half way between the mainland and the few islands scattered along the beach to the southward.



BABYLON TO BELLPORT BAY.

When the Oak Island Life Saving Station is abeam you can steer to the north, up to the entrance to Samawams Creek, which leads to the pretty little village of Babylon. There is plenty of water right up to the pier at Babylon. All kinds of supplies are obtainable here, and several days can be spent in port.

Upon leaving Babylon keep well off Conklin's Point; round this and steer N.E. by E. until off the town of Bay Shore with Fire Island Light a little aft of the beam. The course up Great Cove will lead you to Islip. After leaving Great Cove steer S.E. by E.½E. until clear of Nichol's Pt. Change your course now to N.E. by E.½E. until around the point. You will now cross Nichol's Bay, and pass Green's Point. At Brown's Point there are two breakwaters. If you want to stop at Sayville run up through these breakwaters into Brown's Creek until Sayville Landing is reached. Leaving Sayville keep well outside of Blue Point, which is the next large point to the East and you will be in Patchogue Bay.

Off the Patchogue River there is a breakwater with a red light on the outer end. Running up the river about one mile you will reach the good sized town of Patchogue where a stock of provisions can be taken on. Gasolene can be obtained here.

On leaving Patchogue steer out about 1½ miles into Great South Bay and round Howell's Point, keeping ¼ mile off shore. After rounding the point steer N.E. by E.¼E. until the village of Bellport is off the port quarter. Now steer S.E.½E. rounding Smith's Point. If you have talked to any of the natives regarding the water, you will probably be afraid to round Smith's Point, as they all seem to think that there is more chance of going aground here than anywhere else. In our case, however, we rounded the point without touching bottom and we drew nearly four feet.

For the next five or six miles you will have to keep to the channel, which is not marked, but which is easily seen if a man is stationed as high up in the bow as he can get. From this position one can see a narrow channel through the dense growth of weeds. These make a weedless propeller almost a necessity. You will pass the wide entrance to the Forge River, with the Forge River Life Saving Station on the beach to the south.

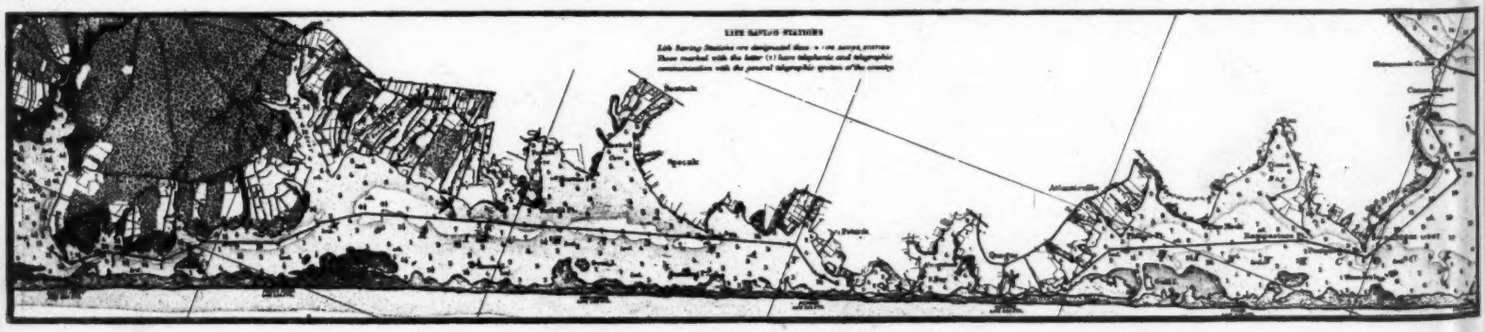
There are many small creeks in the mainland about here, some of which are remarkably beautiful and well worth an exploring trip by canoe or row boat. One in particular, which is not named on the charts but which is entered through a narrow passage between two mounds of earth about 18 or 20 feet high, is one of the most beautiful spots to be found on the coast. The creek leads up to an immense duck farm a short distance from the village of Moriches. This creek is the second from the west of Tuttle's Point, the first being Hart's Cove.

After passing Tuttle's Point you will find Tuttle Cove, Haven's Point and Seatuck Cove, the latter leading under a railroad bridge to Seatuck. Leaving Seatuck round Speonk Point and head for the canal between Petunk Point and the Petunk life saving station. Pass through the canal to Quantuck Bay and from there into the Quogue Canal. After going under the bridge connecting the mainland with the narrow strip of beach you will find a beautiful little anchorage and can spend several days at Ogden's Pond very pleasantly. There is opportunity here for either surf or still water bathing, fishing and boating.

There is plenty of water in the Quogue Canal but it is necessary to keep a vigilant watch for bars. A short run from Quogue

(Continued on page 130)

FROM SHINNECOCK CANAL THROUGH THE PECONIC BAYS TO GREENPORT.



BELLPORT BAY TO THE SHINNECOCK CANAL.

The Electric Elysium Aboard Ship

What to Get to Insure a Satisfactory Ignition and Lighting Outfit Aboard Your Boat, and How to Install It

By WARREN H. MILLER, M.E.

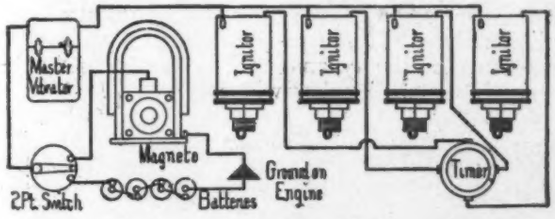
IN the course of a somewhat strenuous existence, I was for six years electrical engineer to the Standard Oil Co. and so got on tolerably familiar terms with thousand-ampere currents, 600,000 cir. mil. cables and other electric lingerie that exploded with a blue snort whenever you touched a switch, yet never have I felt so utterly hopeless, downcast and forlorn in the presence of an electric circuit as when, during tender infancy, I was once called in to doctor the lifeless corpse of a simple six-volt ignition system with but one defect—total failure to ignite. There was nothing at all the matter with it, of course; but you could diddle the switch, thumb the fuse plugs, look wise at the dynamo and brighten up contacts here and there forever with a sum total of naught plus nothing so far as evoking the faintest symptom of juice was concerned.

Now, with power circuits something always happens—something immediate and irrevocable. You throw a switch, and the can factory two miles off bursts into flames, or an ambulance rushes to the assistance of a gang of wops who have been toying with your 2200-volt feeder over on the roof of the grease plant. But almost anything can discourage a low-voltage bell system or motor boat primary circuit or 8-volt yacht lighting plant. And as most of its wiring is snaked through knot holes, under bilge boards and even most ingeniously strung through the limbers under the frames, you swear at it impatiently and long for the wings of an eel in order to crawl along that infernal wire and see what in halleluiah ails it! I firmly believe that nine-tenths of the troubles on motor boats are due to the condition of the alleged metallic circuit over which such a feeble worm as a 6-volt current is supposed to creep. And the other tenth is furnished by a high-tension circuit so all fired sizzling hot-tempered that you can't touch anything on the boat without having four fathoms of shocking language jolted out of you.

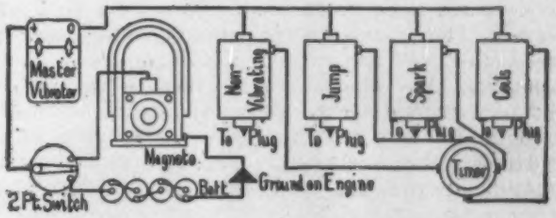
It's all in the point of view. If you were putting in a 110-volt light wiring system with the fear of the fire underwriters hanging over you, you would solder and tape every last joint ever so carefully, and no insulation could be too good, but with the 6-volt you get the idea that it's a kind of bell wiring anyhow and can be hung together any old way, and you hook in a piece of shoelace, twist up connections with a couple of turns of bare wire and come into the switch with an ornamental wire pig's tail. But it is precisely the low-voltage current which should have the most perfect metallic circuit, not because of the fire risk of loose contacts as in 110-volt work, but because its feeble pressure of only a few volts is easily destroyed by the least resistance of grease or verdigris. Wherefore, to have true comfort with your wiring, treat it precisely as if it were a 110-volt marine circuit.

Use no wire less than No. 14 and no poorer insulation than the "white-core, rubber-insulated, triple-braid, solid, tinned copper wire" to quote standard wire specifications for such work. And it simplifies matters a great deal to have much of it "duplex," that is, two rubber-covered wires in one flat triple-braid covering. For instance, the run from your switch is always three wires, to engine, battery No. 1 and battery No. 2 (or magneto). These three wires travel along together from the switch on your cockpit cabin panel or your bridge, down to the vicinity of the engine, where they separate, the center wire going to the engine and the others to the minus poles of battery and magneto. In this case the center wire is best of single No. 14 rubber-covered and the other two a duplex No. 14 rubber covered. The duplex has the two wires side by side, not twisted, so that it fits flat along panelling, under rails, etc. As the voltage is very low the three wires can be secured with small square staples driven in every foot, taking reasonable care not to pierce the protective braiding or the rubber insulation. Such a wire can be drowned in thirty feet of water without leaking current and never gives any trouble from dampness. Bell wire and "K. K. weatherproof," on the contrary, will soon succumb to the dampness aboard ship; in fact, the underwriters will not permit ordinary asphalt insulated (balata gum) "weatherproof" wire to be used in 110-volt lighting circuits at all for marine work. And it is just leakage through damp insulation to "ground," going on continuously night and day, that uses up several sets of batteries in a season, even though you may take her out but little.

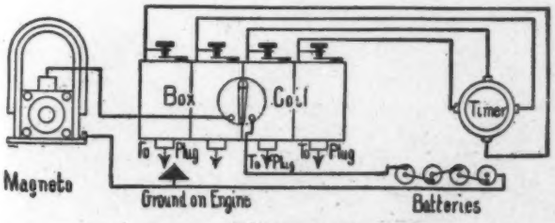
Since the matter of ignition wiring diagrams has been done to death, nay baked to a crisp, in article on article describing wiring systems, this harangue will confine itself to the insignificant, albeit practical, details of the wire itself and the "fittin's" which you must buy with good iron dollars in order to put your diagrams



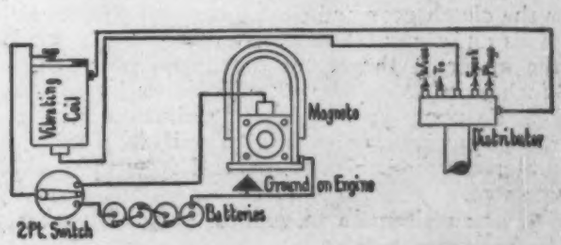
WIRING DIAGRAM FOR BATTERIES, MAGNETO, MASTER VIBRATOR AND COMBINATION WATERPROOF COILS AND PLUGS.



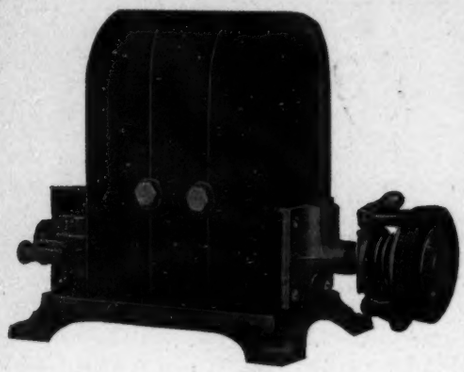
WIRING DIAGRAM FOR BATTERIES, MAGNETO, MASTER VIBRATOR AND NON-VIBRATING JUMP SPARK COILS.



WIRING DIAGRAM FOR BATTERIES, MAGNETO AND VIBRATING COIL.



WIRING DIAGRAM FOR BATTERIES, MAGNETO AND ONE VIBRATING COIL AND DISTRIBUTOR.



"FOOL AND WATERPROOF."

into actual service. The wiring plans speak for themselves. I give four standard layouts herewith. Connect up the various points indicated with your wires and there you are. It is what you use to connect up and how you install it that counts in the season's motor boating.

Note also that the direction of the current is important in jump-spark ignition, since the primary is used as a part of the secondary circuit, so be sure that your positive battery wire (from carbon pole) leads direct to the coil and your negative (zinc) through the switch to the "ground" on your engine. Why? Because if you run it the opposite way, not only does your high-tension secondary go through the primary coil in the counter direction, thus weakening its effect, but also it must pass through the batteries, switch and engine to reach the spark plug gap and so everything is loaded with high-tension electricity which will sting you unmercifully if you happen to be standing on any good "ground" to the engine and then should happen to touch switch, battery or wiring.

If your motor is two-cylinder there will be two wires to the timer and one to the engine "ground" screw, so that a lead of No. 14 duplex white-core rubber-covered will take care of the timer and one of single wire, same insulation, will take the "ground." If three-cylinder, two duplex wires are the thing, three of them running to the timer and the fourth to the ground.

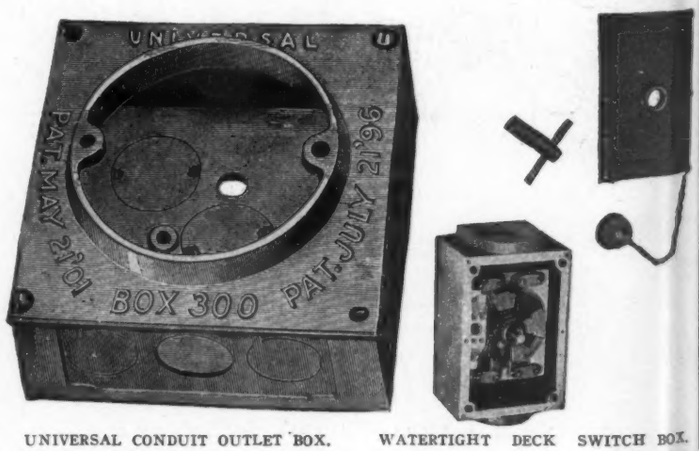
Most batteries are stowed in some dry locker near the skin of the ship so that it is necessary to cross under the floor to the engine. A short length of galvanized iron "loricated" conduit is the thing for this lead. A half-inch pipe will take one duplex and a single; three-quarter inch will take two duplex. Order with them rounded bushings for each end. The conduit bends very easily so that you will have no trouble fitting it on the job to follow any turns and bends required. Better get a short steel 3-16-inch snake or fish wire if you are going to put in much conduit, but if only a short run with easy bends the duplex will feed in by shoving without trouble.

A plan to avoid wiring under the floor that I have used successfully in power cruisers around 35 feet is to put all the ignition primary and secondary under a table which goes over the engine. Such a table, 13 inches wide by 3 feet long, will cover a 12-H. P. two-cylinder engine and clutch, and the legs are of ½ inch round iron which slip in holes bored into the engine timbers. Any blacksmith will make these up for you, bend them square and flatten them where the screw holes go through to the under side of the table. The high-tension coils screw under the table immediately over the cylinders with short leads direct to the spark plugs. Do not get them too short, however, or the play between the engine and table will surely pull them loose no matter how tightly the binding posts are screwed up. The batteries go in a shallow box at the after end of the table over the clutch gear and the primary winding is short and direct to coils and timer. The table makes possible the installation of the motor in the center of the main saloon, as with hinged 6-inch sides it opens up to 25 inches by 36 inches for spreading meals upon, yet it is easily picked off for engine repairs after disconnection of wiring. The ignition switch, clutch and carburetor are mechanically operated from the cockpit with this arrangement.

Working as an alternate to your battery will probably be a low-tension magneto. It is usually driven off the flywheel of the engine. As a good direct current magneto will run your lights also it is quite a temptation to install one in your power cruiser where there is an engine-room devoted to things mechanical, but for small launches I am in favor of sticking to something cheap and simple for ignition current like a 6-cell dry battery, in a tarred starch box filled with batteries and melted paraffine or a regular waterproof battery box made for the purpose. They come in sizes from 6 to 18 cells. But if you have room for it and the engine is solid on its timbers so that there is no vibration in the flywheel a magneto will not give any more trouble than moving machinery usually does, and you can put on magnificence with an installation of electric lights—especially if you float a storage battery on the line to help out when the engine is not running. Better get a magneto that is fool and waterproof. See that the shaft housing has a turned fit or a screwed fit into the end frame so that you can take the armature out and get it back again without putting the bearings out of line, and see that no armature wiring at all is exposed to the wet. There should be nothing for water to hurt but steel permanent magnets and brass armature housing. There will come a time, you know, when you will have six inches of water over the cabin floor, through circumstances beyond your control, and this will be sorrow enough without having your armature wires soaked and ruined to boot.

If your magneto is of the alternating current type, you are spared commutator troubles (mostly over-rated) but a variety of induction phenomena peculiar to all alternating current circuits are introduced which must be provided against or you will have sparking vibrators, weak discharge at the plug, and punctured condensers. Some sort of a choke coil and condenser discharge (protected, of course, from water) must be provided on the magneto to overcome these defects, and the best makers have done so, the so-called rectifier of the Perfex magneto being an example. As for hooking up, the low-tension magneto simply takes the place of one of the batteries on the simple primary battery wiring diagram. If storage batteries are put in the circuit the charging voltage will be about 2.4 volts per cell, while the fully charged cell gives out 2 to 2.1 volts and should not be allowed to go below 1.8 volts per cell. The wiring arrangement is as follows: positive of dynamo to positive of storage battery, thence from negative of battery through ammeter, to circuit breaker, to dynamo.

Leads to light and ignition are taken off positive between motor and battery and negative between ammeter and motor. So long as the dynamo is running it delivers its full amperage of 5 to 10 amperes at full speed and all that the ignition and lights do not take is absorbed by the storage battery. If the dynamo slows down so that its voltage drops below charging voltage for the battery (6 volts) then the battery begins to discharge and runs the lights and ignition. If the dynamo slows too much its circuit breaker opens automatically and the storage battery then runs the lights alone. If you have no circuit breaker the storage battery will burn out the dynamo as soon as it stops. A Westinghouse Type F 10-amp. breaker will cost you $2. The ammeter



UNIVERSAL CONDUIT OUTLET BOX. WATERTIGHT DECK SWITCH BOX.

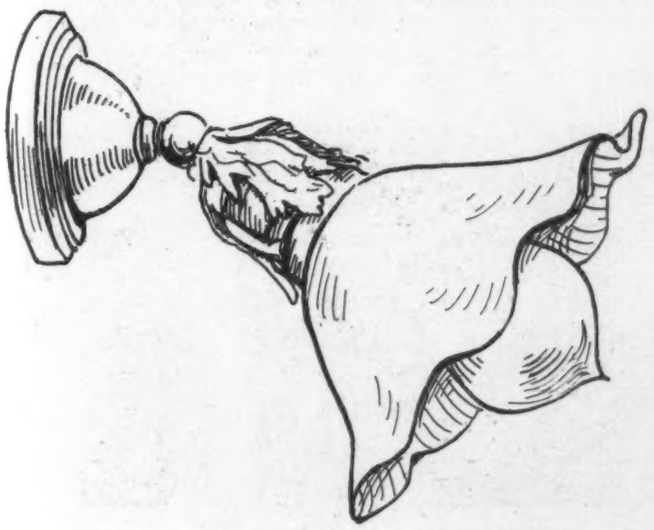
shows by its needle pointing one side or the other of zero whether the dynamo is charging the battery or the battery is running the lights and ignition. If it stands directly on zero it shows that the dynamo is just holding its own with the lights and ignition and putting nothing extra into the battery. A 6-volt 5-ampere dynamo will cost about $20 and weigh about 15 pounds. A 6-volt 60 ampere-hour battery will weigh 25 pounds and cost some $16. The double ammeter with zero center, small disc face, will cost from $8 to $12.

To keep your storage battery in good shape you will need a pocket voltmeter and a hydrometer as it is essential to keep the voltage and specific gravity up to the mark. If your battery gets down to 5.4 volts it wants charging up to 6.2 or 6.3 volts and you should speed the dynamo up gradually as the storage battery voltage rises, until at the end your dynamo will be about 7 volts and the amperage flowing into the battery has fallen from normal of 5 amps. down to 2 or 3. Do not let the charging amperage exceed 5 or the dynamo will burn out its own wiring insulation. If it runs over 5 the engine wants slowing down. Such a system will give you both lights and ignition at all times, and, with an occasional charging to make up for extra use of the lights, will get along without much trouble.

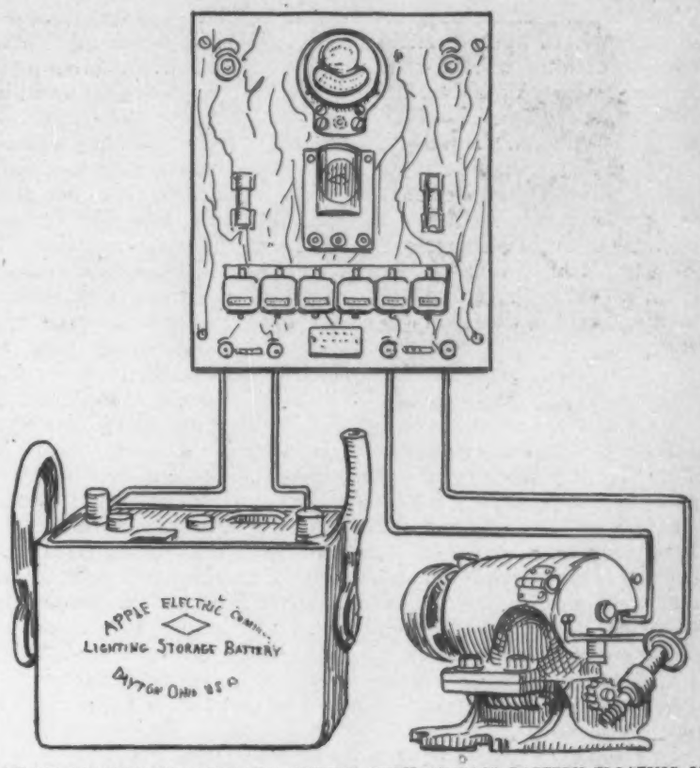
As the storage battery is continuously dissociating its water into hydrogen and oxygen when running it uses up a surprising amount of water. Keep tabs on it with your hydrometer; keep the specific gravity above 1.8 by proper charging, and add fresh *distilled* water as needed. Battery is touchy about this—any old water out of the clubhouse faucet will not do, for it contains chemical impurities which will ruin the battery. Better buy ten cents worth of distilled water once a season from the druggist and save $15 worth of battery.

For your cabin lights you have choice of either standard or miniature Edison base fixtures as 6 and 8-volt lamps are made with both bases, but the miniature base yacht fixture is the thing; and, while you are at it, better get tungsten lamps as they are strong and hardy in the miniature size and use less than half as much current as does the carbon filament lamp. Remember the storage battery!

There is also considerable choice in the ornamental style of the fixture, but a handsome little plain husk with miniature round frosted globe can be had in several standard finishes. Most yacht electric light fixtures have cast bases with three screw holes which match the outlet bases of conduit systems. They are stronger and more handy to put up than the crowfoot and canopy arrangement used on land. A neat handsome yacht light fixture, miniature lamp base, plain "husk" pattern, will stand you about $2, and, with a 6-c.p. frosted, round tungsten bulb, makes a nifty cabin illumination. The fixture is simply screwed to the panelling over a hole through which its wiring is hooked into the main line



A HUSK PATTERN YACHT ELECTRIC LIGHT FIXTURE.



LAYOUT FOR ELECTRIC LIGHTING SYSTEM WITH STORAGE BATTERY FLOATING ON THE LINE.

if cleat and duplex wire work, or it is screwed onto corresponding screw holes in the outlet box for conduit work. Any fool can put them up, *provided* he solders and tapes all fixture connections to the main line before tucking them away and screwing the fixture base in place. For moulding work cast base fixtures are screwed to round wooden bases of the same thickness as the moulding with wire notches cut in them where the moulding meets up with the block. None of these fixtures should be fused. Not only is a fused fitting a nuisance but the fixture base is a dangerous place for even a ½ ampere fuse to blow in. You should have, rather, a pair of 6-ampere master fuse plugs controlling the whole line and mounted in a cast iron waterproof receptacle right near the dynamo and storage battery outgoing feeder.

For larger fixtures with standard Edison base and 110-volt yacht dynamo circuit there is the small cast iron crowfoot screwed to wall or panelling for holding the end of the fixture tube, which comes already wired. The wires pass out through the crowfoot and you twist and solder them to the line, tape the joint thoroughly and then slip the crowfoot covering or "canopy" into place and secure with its set screw.

For interior motor boat light wiring ½-inch loricated conduit is, of course, the best, and considering how little of it there is altogether it will not cost much to put in. The outlet boxes cost about 10 cents each and have various styles of covers to take standard switches, fixtures, etc. The conduit holes are punched nearly through, requiring but a tap of the hammer to knock out any hole wanted. The conduit secures into the box with a round edged bushing inside and a locknut outside so be sure and order enough of each to take care of all the joints you are likely to make.

To get outside to your running lights, come up through the deck close to the screens with a long thread and two locknuts on the conduits and attach above decks two-wire outlet caps. Lead your wires from there to the lamp connections with short drip-loops. The snap switch controlling all three running lights should go below decks on an outlet box with switch cover. If you attempt to use the watertight marine switch for outside work on large steamers, it will cost a good deal no matter what sized conduit is used.

The wire used throughout in this conduit work is No. 14 duplex solid, white core rubber covered, double braid. As next choice to conduit work I should put good yellow pine two-wire moulding with single No. 18 rubber covered wires. Order it without paint of any kind and stain or paint to suit the wood work it is run on. Specify all switches, fixture canopies, fuse boxes, etc., for two-wire moulding and you can then make neat fits with no exposed wires at the junctions. Simply bare the main wires and solder to fixture wiring for all lamps; and with duplex wire cut the braid off for several inches at the lamp, separate the twin wires and bare each where they pass under the bases. For concealed wiring running along the skin of the ship behind the panelling, lead-covered duplex is the most expensive; next, rubber covered duplex run in the flat metal duct known as "Sherar-duct," and finally plain rubber covered duplex painted and strung on one-wire porcelain cleats. This latter is plenty good enough for the average motor cruiser.

Whatever system you adopt, be sure to have a receptacle somewhere near the engine with a pair of 6-amp. fuse plugs controlling both wires of your line. In case of a dead short circuit without any fuses, your storage battery will be sure to dump its whole charge out on the line and burn something up, or else your dynamo, if on at the time, will burn out its armature coils. And be sure to take along a half dozen extra plugs, for some wet stormy night the plugs will blow on you and you will use up several more finding out where the ground is.

For small boats liable to be rained into, and speed boats with a chronic habit of showering a lapful of spray over their owners, some sort of absolutely waterproof ignition system is essential. One well-known system has no high-tension wiring at all exposed as there is a separate spark coil in combination with each plug. A master vibrator in a cast iron watertight box is connected up to the plus side of all the ignitors in multiple, while the minus leads go to the respective screws on the timer. The contact lug of the timer is, of course, "ground," being part of the engine, and from there the minus connections of either battery or magneto lead the current back to its source of electric pressure. The positive wires go through the switch to the master vibrator. As this latter is in practically continuous operation while the engine is running the additional wear and tear on the vibrator points call for special design in the magneto to avoid excessive burning; but there is compensation in having but one vibrator to keep track of, perfect synchronism in timing, and exactly the same spark strength in all cylinders, since the same vibrator serves them all.

It is the vibrator quite as much as the current strength which decides how fat a commodity your spark is to be. With every make and break of the primary there is a current set up in the secondary induced by the change in current pressure in the primary. This current breaks across at the gap in the spark plug every time the vibrator opens the primary circuit, so that the faster the vibrator goes the fatter the spark becomes. At the same time there must be amplitude of vibration enough to develop the full strength of the coil and its magnetic core, so that it will not do to speed up the vibrator by screwing it down so tight that it has practically no room to work in. The golden mean is best found by sight and sound. Put your plug out on the cylinder and watch results. When the vibrator gives out a full resonant buzz and the spark is fat and reddish, you have arrived.

Another system of waterproofing the ignition is to put a bell hood on the spark plug, which hood protects the all-important porcelain shaft from the wet. While this will do for occasional hatfuls of spray it is of little value in a pelting rain as the rebound from the raindrops striking the cylinder head is sure to get on the porcelain. Even machine oil in your spark plug porcelains is bound to cause trouble, as mineral oil is a fair conductor of high-tension electricity and a red hot streak of it will creep down the porcelain to the bushing leaving a neat crack behind.

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HOW A HYDROPLANE "PLANES." ONE OF THE DIXIE JUNIORS WHICH AVERAGED OVER 43 MILES AN HOUR IN A RECENT SPEED TEST OVER A MILE COURSE.

The Month in Yachting

THE special meeting of the American Power Boat Association which was held on June 19th, was attended by only thirteen representatives, but as these thirteen knew what they were there for, they were able to act intelligently on the important questions which were to come up at this meeting—a meeting which was called to legalize the action taken at the annual meeting in February.

Outside of defining a hydroplane and dividing them into classes of 20, 26, 32 and 40 feet, as has been told in a previous issue of YACHTING, the changes made in the rating rule were not sweeping or of particular importance. One of the points which the meeting cleared up was the ambiguity as to what constituted a cruiser. Boats raced under the A. P. B. A. rules are now divided in four classes, viz., cruisers, open boats, racers and hydroplanes, and a cruiser is defined as a boat with permanent berths, fixed and sanitary plumbing arrangements and outfit necessary for living on boat. The cabin must have a headroom in the clear equal to 16 per cent. of the overall length up to 6 feet, and this headroom must extend for one-quarter the length and one-quarter of the maximum beam. An open boat is any boat not a cruiser whose rating is not over twelve times the square root of the load waterline length.

What the meeting did, however, which is of importance to the future status of the association, was to revise the articles of the association so as to give the body controlling, instead of merely advisory powers. This is of importance, and if it can enforce its position it will be a good thing for the racing game, particularly if it is the entering wedge for a national controlling body formed of delegates from the different national powerboat associations.

The new paragraph reads as follows: "The powers of the association are controlling, and are to include the power to regulate and control all matters relating to racing rules, the appointment of committees or commissions, measurements, classifications and rating, with the right to extend any and all of its powers to the council to act for it and in its place and stead between its meetings, subject always to review by the association."

It is to be hoped that the trip which the Manhasset Bay Challenge Cup is making to Chicago will have a salutary effect on the health of the trophy which has stirred up so much strife and ill feeling in the last few years. Now that it has found a home 1,000 miles away, possibly the Eastern yachtsmen will go after it in different spirit than has marked the last two races, which were spoiled by squabbles and bickerings. I might qualify this last statement, however, by saying that after the present series of races were finally started, the best of feeling prevailed, although it looked up to the morning of the race as if there might be no contests this year owing to a resumption by the American Yacht Club of the stand that was taken by the committee in charge of the race of 1911. To be quite honest, the American Yacht Club was only consistent in its stand, as the accepting without question of boats that had been protested the previous year would have been to acknowledge that their committee was in the wrong then. However, if they had persisted in their stand the cup might as well have been hove overboard for all the future

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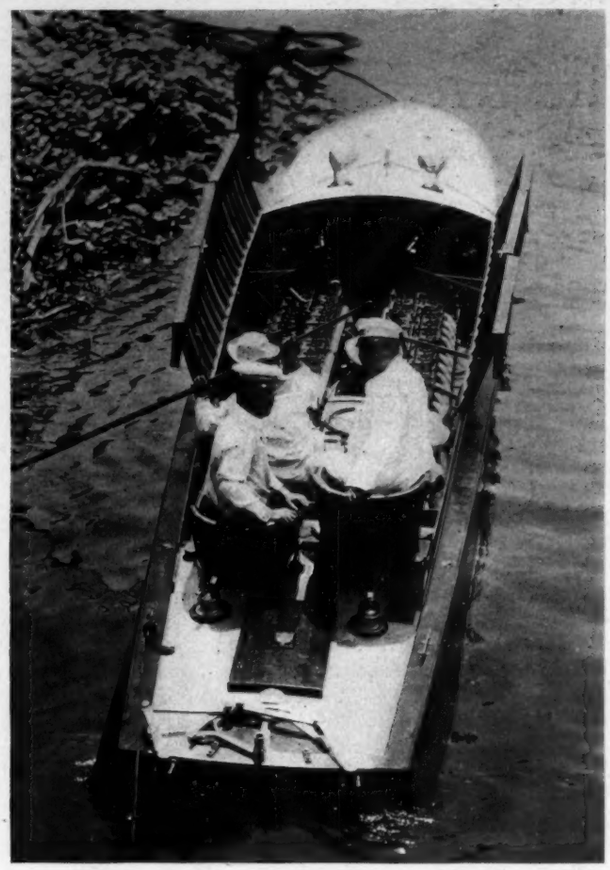
AVANTI, A 20-FOOT ELCOPLANE CAPABLE OF CARRYING FOUR PEOPLE AT A SPEED WELL ABOVE 35 MILES AN HOUR

good it would have done the sport.

It was a sore "bunch" of yachtsmen that met on the deck of the committee boat after the American Yacht Club's protest had been announced, and I understand that there was some pretty plain talk at that meeting. There was even an offer then and there of another cup as a substitute for the Manhasset Bay Trophy. The withdrawal of the protest by the American Yacht Club was not only a wise move, but an excellent thing for the sport, as it cleared an atmosphere surcharged with a good deal of electricity. The cup will not be allowed to stay West without a struggle, and it seems likely that an Eastern boat will be sent to the Great Lakes next year for the purpose of bringing it back. By that time it is anticipated that an Atlantic Coast Conference will have amended the troublesome rule so as to clear up the existing situation in regard to measurement.



DISTURBER III, THE NEW 40-FOOT HYDROPLANE OF COM. JAMES A. PUGH OF CHICAGO.

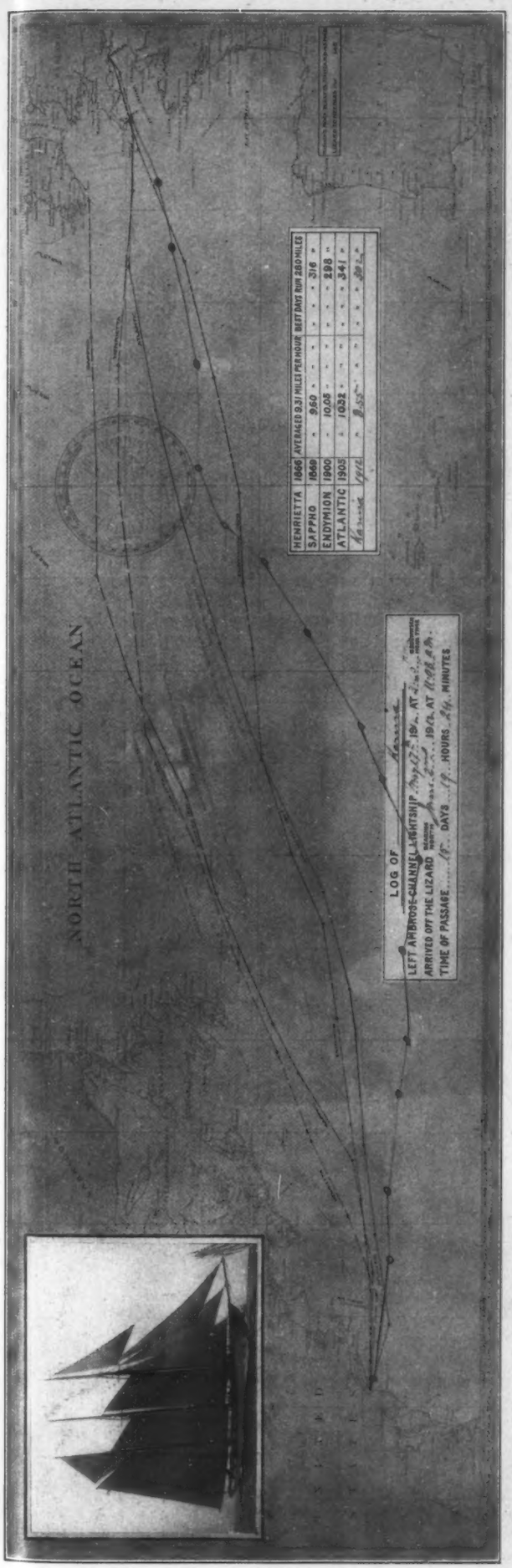
Of the new speed boats of which much is expected this year the one that the motor boating public is most anxious to see perform is the new Disturber III recently launched in Chicago for James A. Pugh. This boat was a little late in leaving the builder's shop so that she could not be tried out prior to shipping her to Davenport for the races there, with the consequence that she was not in condition to run at that important regatta.

The boat is a 40-foot Fauber hydroplane carrying two 12-cylinder engines of 250 H.P. each, and it is confidently expected by the designer and builder that she will exceed in speed any boat turned out last year. Though a 40-foot boat with 7 feet beam, her power is not as great as that of Dixie IV and it will be an interesting comparison to watch the performance of these two boats of practically the same size though of different type. The new boat is of very light construction. All those who know Dixie IV feel that there is more speed in her than was shown last year, and while it is possible that she may be beaten by a 1912 boat, she will doubtless make interesting racing over a 30-mile course for any product of 1912. It is hoped that the hard luck which Commodore Pugh experienced in his racing last year will have used itself up on Disturber II, and that he will not have any more trouble with his new boat than that which is the part of any high speed racing craft. Here's wishing Disturber III success!

While yachtsmen are noted for having more or less of a penchant for getting into trouble afloat, it is also on record that they have frequently taken great risks for the purpose of saving life and aiding others in distress. There are records of many such cases to prove the truth of this assertion. It is not often that a summer squall does enough damage to bear more than passing mention, but one occurred recently on Long Island Sound towards the close of the annual regatta of the New Rochelle Yacht Club which not only was unprecedented in its violence but which bears out the statement just made.

The squall broke as the boats of some of the smaller classes were finishing, so that many of them hung on to their canvas until the last minute. Though of short duration, probably not over twenty minutes, the wind blew at a conservative estimate of between 70 and 80 miles an hour, being more in the nature of a cyclone than a summer squall. Of the racing fleet, eleven boats were capsized, three of them sinking, and that no lives were lost was due to the fact that the crews of other yachts, though they had all they could do themselves to handle their boats, immediately went to the rescue. This was largely true of the power boat fleet, most of which were at anchor at the time. Knowing that there would be many boats in trouble, a number of them started out on the work of rescue in the height of the squall and before they knew just what damage had been done. If it had not been for this prompt action on the part of the owners of power boats in the vicinity, considerable loss of life would have resulted. A number of men were picked up several miles from shore whose boats had been sunk under them, who would undoubtedly have been lost but for this prompt action on the part of the power boat owners.

THE NEW LONG ISLAND SOUND SCHOONER CLASS IN A SCRAP FOR THE WEATHER BERTH.


NORTH ATLANTIC OCEAN
HENRIETTA 1866 AVERAGED 9.31 MILES PER HOUR BEST DAYS RUN 280 MILES
SAPPHO 1869 " 9.60 " " " 316 "
ENDYMION 1900 " 10.05 " " " 298 "
ATLANTIC 1905 " 10.32 " " " 341 "
LOG OF
LEFT AMBROSE CHANNEL LIGHTSHIP
ARRIVED OFF THE LIZARD
TIME OF PASSAGE
DAYS
HOURS
MINUTES

TRACK CHART OF THE NORTH ATLANTIC SHOWING KARINA'S COURSE (THE MOST SOUTHERLY ONE) AND THE COURSES OF HENRIETTA, SAPPHO, ENDYMION AND ATLANTIC ON THEIR RECORD PASSAGES.

The Log of the Karina on Her Transatlantic Passage

WE print below extracts from the log of the Karina, Ex-Commodore Robert E. Tod, on her recent trip across the Western Ocean. This log shows her position at noon each day and also the daily runs for the trip. The track chart which we reproduce indicates the route taken by the Karina and shows how far south she had to go on account of the unusual ice conditions before swinging north for the English Channel. The chart also shows the tracks made by a number of other famous yachts that have made transatlantic records. It will be seen from these that the Karina sailed a much longer route than the others, the total miles being 3,245 as against 3,013 sailed by the Atlantic in the race of May, 1905. Karina had a number of very creditable day's runs, the best being 302 miles from noon to noon (actual time about 23 hours and 40 minutes), while in one ten hours she made 150 miles—or an average of 15 miles an hour. That her average speed was not better was probably due to several days of head winds and calms.

LOG OF THE KARINA—Ambrose Channel Lightship to the Lizard. Started 3:40 P. M. (Greenwich Time), May 17th, 1912.

	Latitude.	Longitude.	Distance.
May 17th Noon	.. ..	.. ..	20
" 18th "	39° 26′	66° 58′	302
" 19th "	39° 37′	68° 29′	168
" 20th "	39° 08′	58° 10′	245
" 21st "	38° 48′	55° 25′	135
" 22nd "	39° 00′	50° 35′	230
" 23rd "	38° 27′	45° 18′	254
" 24th "	39° 51′	41° 05′	219
" 25th "	41° 05′	38° 15′	148
" 26th "	42° 00′	33° 22′	255
" 27th "	44° 46′	29° 38′	190
" 28th "	46° 16′	27° 31′	131
" 28th "	47° 11′	24° 22′	142
" 30th "	47° 21′	18° 38′	238
" 31st "	48° 19′	12° 22′	267
June 1st "	48° 46′	8° 41′	146
Distance to Lizard			155
Total			3,245

Arrived off the Lizard Light June 2nd, 1912, at 11 h. 03 m. (Greenwich Mean Time).
Time of passage, 15 days, 19 hours, 24 minutes.
Best day's run (Noon to noon, about 23 h. 40 m.), 302 miles.
Best 10 hours' run, 150 miles.
Average per hour for whole distance, 8.55 miles.

Some of the other record passages made by yachts are the following:

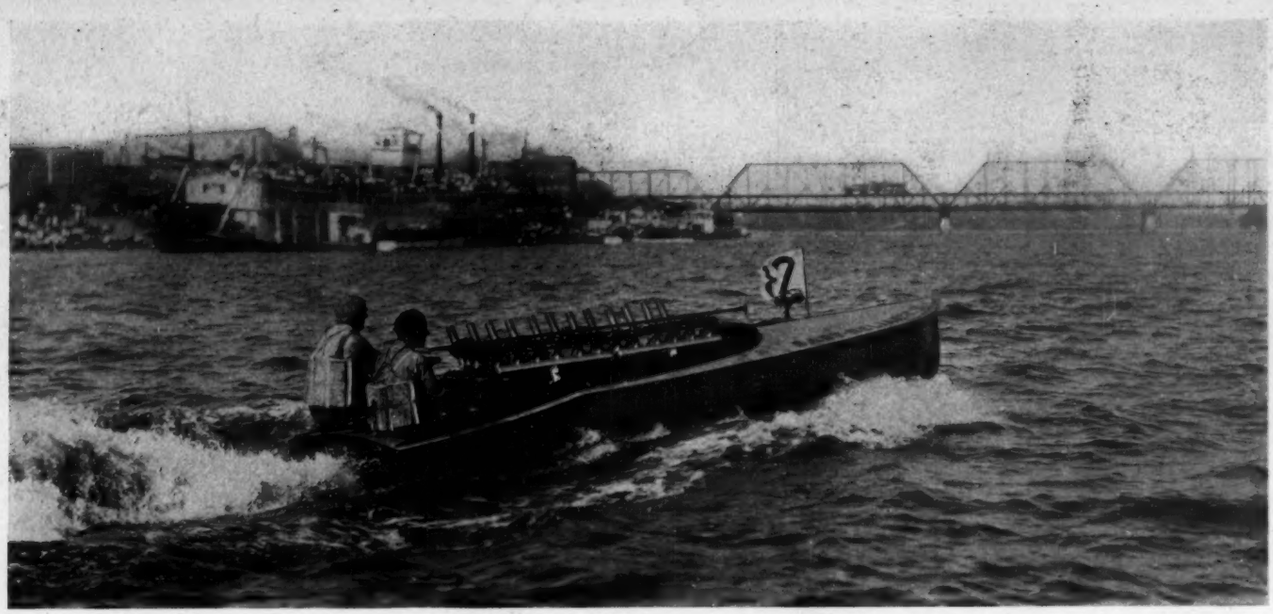
Yacht's Name.	Course.	Start.	Time of Passage. Days.	Hrs.	Min.	Dist. Sailed. Nautical Miles.	Average Per Hour Whole Distance.	Best Day's Run from Noon to Noon, about 23h. 30m.
Henrietta,	Sandy Hook to Needles	Dec., 1866	13	21	45	3106	9.31	280
Sappho,	Sandy Hook to Queenstown	July, 1869	12	09	36	2857	9.60	316
Coronet,	Bay Ridge to Roches Point, Ire.	Mar., 1887	14	19	03	2949	8.31	291
Vigilant,	Sandy Hook to Tory Island, Ireland.	June, 1894	14	08	00	2930	8.52	256
Endymion,	Sandy Hook to Lizard	June, 1900	12	19	58	3097	10.05	298
Atlantic,	Sandy Hook to Lizard	May, 1905	12	04	01	3013	10.32	341

It may be interesting to compare some of these records with some of those made by the famous clippers in the middle of the 19th century.

Red Jacket.....1854.....New York to Liverpool.....13 days, 01 hrs., 25 min.
Mary Whitredge.....1855.....Baltimore to Liverpool.....13 days, 07 hrs. (3400 miles).
Adelaide.....1864.....New York to Liverpool.....12 days, 08 hrs.
Thornton.....1867.....New York to Liverpool.....13 days, 09 hrs.
Dreadnought ..(Feb'y) 1859.....New York to Liverpool.....13 days, 08 hrs. (3032 miles).

On this trip Dreadnought sighted the Irish coast in 9 days 17 hours but took 3 days 15 hours more to reach Liverpool. Her best day's run was 367 miles. Her dimensions are as follows: Length of keel, 200 feet; length of deck, 217 feet; breadth of beam, 33 feet; extreme breadth, 41 feet; depth of hold, 26 feet; 1,431 tons registered.

The best day's run of a sailing ship on record is 375 knots or 432 statute miles, made by the Sovereign of the Seas. Flying Cloud once made 374 knots or 431 statute miles in 24 hours and 25 minutes, equal to 15.32 nautical miles or 17.65 statute miles per hour. Red Jacket ran 2,280 miles in 7 days, or 325 miles per day.



BABY RELIANCE III SEEMED TO BE ALL ENGINE.

Records Broken at the Mississippi Valley Regatta

IF there were any prizes at the annual regatta of the Mississippi Valley Power Boat Association that were not taken by the Reliance fleet, the general public is not aware of it. There were other boats at Davenport's big regatta but most them might as well have stayed away as far as anything they did toward stopping the Reliance squadron from cleaning up.

There are a lot of Reliances now racing—so many that to think of them collectively makes one's head spin. They are all called Baby Reliance and the suffixes on their names run up into two figures. The star of them all, however, was No. III, owned by Commodore J. S. Blackton of New York, and racing under the flag of the Atlantic Yacht Club. She is a 20-foot boat carrying a 12-cylinder Van Blerck motor and she was driven in the race by "Baldy" Ryan in a way that opened the eyes of the crowd that had gathered on the banks of the Mississippi to see the biggest regatta that had ever been run in Davenport. This little 20-foot boat captured the championship race on July 5th covering the 20 miles in 34 minutes and 27½ seconds, beating Chicago, which is none other than the Disturber II of last year, (a boat, which in the hands of Commodore J. A. Pugh made a record for herself) and Wigwam II, a boat that had been brought all the way from Astoria, Ore., to show Easterners what a fast boat really was.

By winning this race Commodore Blackton secures the Webb trophy and a $1,000 cash prize. Wigwam was second while Chicago was third.

In the 20-foot free-for-all championship, Baby Reliance III covered one of the five-mile laps at the rate of 40.44 miles per hour, while later, in an exhibition mile against time, down stream (with the current), Baby Reliance III ran a mile in one minute and 7 seconds, or at the rate of 53:7 miles per hour. This is faster time than a power boat has ever made in this country, but cannot stand as a record as it was made with the current and not over a Government measured course.

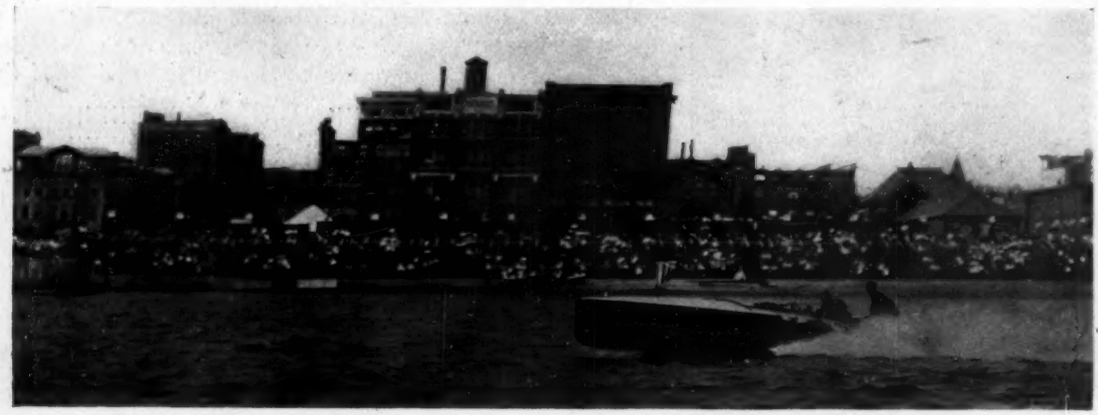
Commodore Pugh had his new Disturber III on the course, but unfortunately she was not in condition to start and was shipped home before the free-for-all race. She was shipped to Davenport from Chicago before being tried out, owing to Commodore Pugh's desire to live up to his promise to enter in the race, and on her initial trial her clutch and bearings heated up to such an extent that she could not be started in any of the races. It was a great disappointment to Commodore Pugh and to the crowd of spectators.

The new Disturber is a fine looking boat, being a 40-foot Fauber hydroplane carrying two Van Blerck motors with a total of 24 cylinders. Commodore Pugh has hopes that she will prove the fastest boat in the world, and she will have ample opportunity to demonstrate this fact before the season is over.

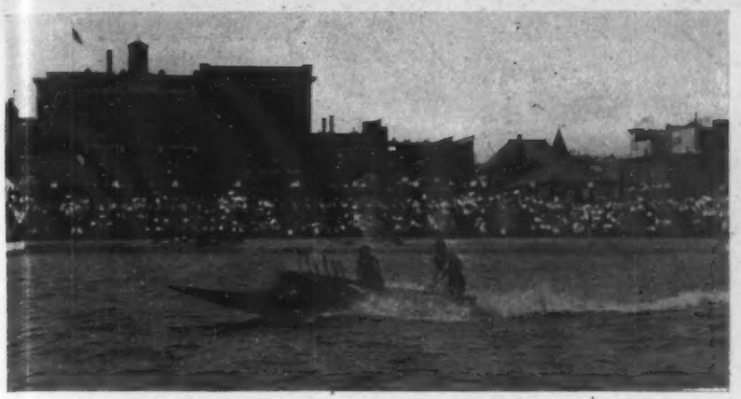
The following is the summary of the three days of racing:

FIRST DAY, 20-FOOT CLASS, DISTANCE 15 MILES:

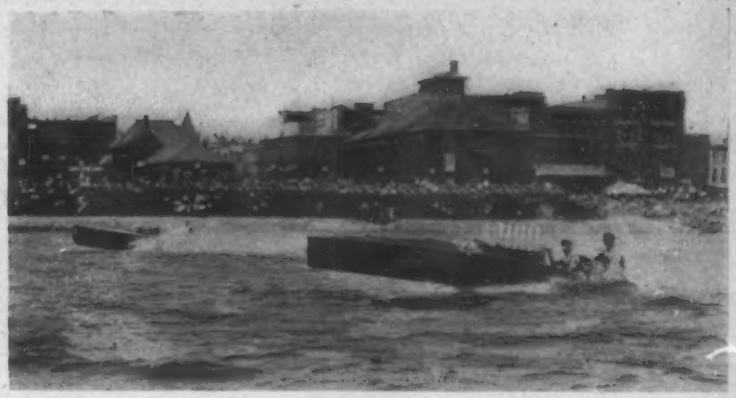
	First.	Second.	Third.
Baby Reliance	12:52 2/5	23:22 2/5	34:16¾
Baby Reliance III	13:17	23:45	34:53
Leading Lady II	13:00	24:01	35:54½
P. D. Q. II	16:03 2/5	32:47 2/5	49:56



WIGWAM II CAME ALL THE WAY FROM THE PACIFIC COAST TO TRY HER LUCK.



REGAL TIGER WAS A QUEER PRODUCTION.



LEADING LADY II.

32-FOOT CHAMPIONSHIP, 20 MILES. FOUR LAPS OF 5 MILES EACH.

	First.	Second.	Third.	Fourth.
Baby Reliance	8:04	16:58	26:00	35:00 1/5
Baby Reliance III	8:16	17:04	26:56	35:28 1/5
Wigwam II	8:59 3/5	17:52 2/5	26:11 4/5	36:01 2/5

CLASS J FOR RACING BOATS OF 3 CYLINDERS OR LESS. 10 MILES.

	5 Miles.	10 Miles.
P. D. Q. II	15:14 2/5	31:49
F. E. S.	17:25	35:22
Bumble Bee	18:32 4/5	37:24 1/5
Sliver II	19:49	39:24
Ilowa	24:12½	.....

SECOND DAY. 40-FOOT FREE-FOR-ALL CHAMPIONSHIP FOR WEBB TROPHY AND $1,000 CASH PRIZE. 20 MILES.

	First.	Second.	Third.	Fourth.
Baby Reliance III.....	7:25	16:06	24:51 4/5	34:27½
Wigwam II	9:02	17:58	27:07	36:02
Chicago	17:17	24:50	38:00½	50:56½

26-FOOT CHAMPIONSHIP. 20 MILES.

	First.	Second.	Third.	Fourth.
Baby Reliance	7:29 2/5	16:56½	24:31 2/5	33:28 3/5
Wigwam II	9:57 4/5	17:54	26:47 4/5	35:46
Leading Lady II..	11:26½	23:05	36:04	Did not finish

The Yachtsmen's Club Ocean Race

By "DOC"

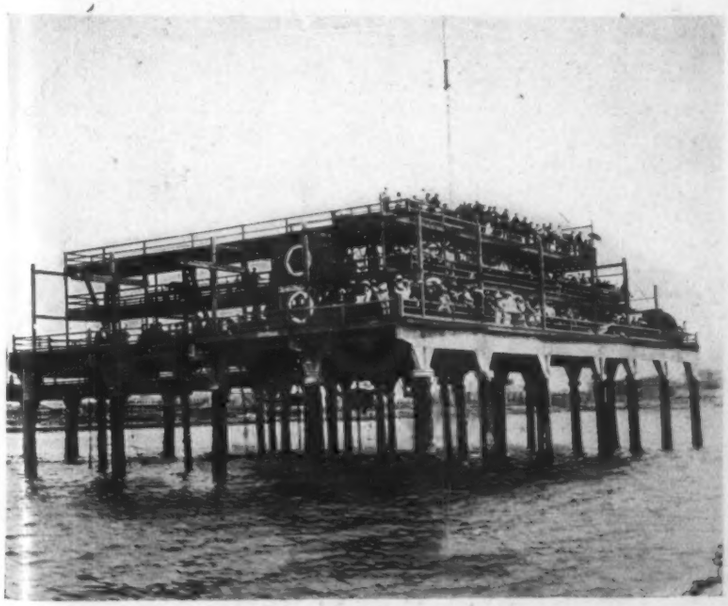
THE Yachtsmen's Club selection of a race course on the blue sea for their annual July 6-7 event was a good one, as the racers had quite a little chart work and compass navigation to figure out in order to place even the faster boats over the line winners.

Starting from the new pier off Atlantic City, the yachts sailed on a S. by W. ½ W. course for 23½ miles to North East End Light Vessel, where all reported before taking the next run of 65½ miles to Winter Quarter Shoals Light Vessel on a S. S. W. ⅜ W. course. Here again the boats reported and returned over the same course to Atlantic City, reporting at North East End Light Vessel some time in the morning. The distance figured by the regatta committee was 178 nautical miles.

The Ventnor City Yacht Club opened its handsome house for the race and gave an elaborate smoker to the visiting yachtsmen the Friday evening before the start.

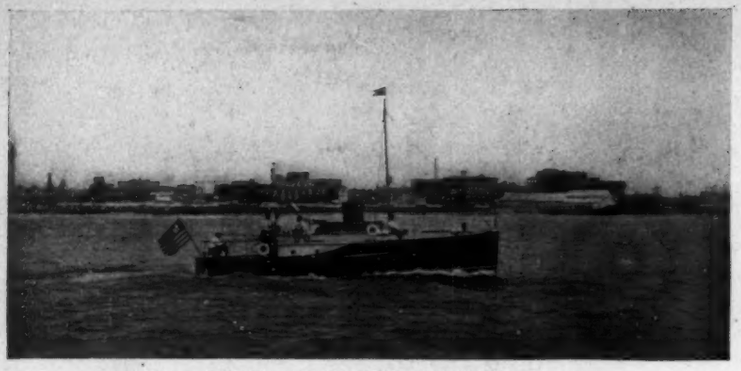
All entertainments and smokers should be given after a race. We on the Chelwood had a hard time to get away from the club as every yachtsman wanted to have a look at the boat. So it was with Eugenia and we all wished the race was to be run several days later. At last we saluted and made for the starting line, but had to run slowly as the big dredger was in the way about half way to the Inlet, and we got aground and lost enough time to make us 20 minutes late at the pier. The other boats would not start until we arrived although they had a perfect right to do so, and it would have served us right.

The sight that morning was one long to be remembered by the yachtsmen who sailed pass the great pier where hundreds of

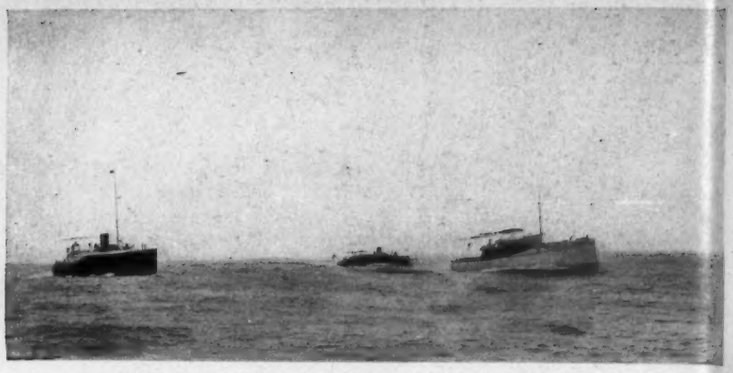


THE STARTING POINT. LONG PIER, ATLANTIC CITY.

BEFORE THE RACE—ON BOARD CALIPH.



DREAM, AN ABLE LITTLE SEAGOER.



WHILE THEY WERE BUNCHED. MIRNA IN THE LEAD.

their friends were saluting. The preparatory signal went up at 11.30 A.M., and the excitement of getting a good position added to the fun. Then came the starting signal for Class B at 11.40, and Chelwood took the lead with Eugenia second; Mirna and Dream followed a hundred yards after and the great race was on.

We watched Dream from the Chelwood, knowing full well should she gain an inch a mile we were defeated, as we must give her 23 minutes over the course. On board Dream they watched us and waited anxiously to see if all the refinement of the designer's art which had gone into her had been in vain.

Eugenia was beaten from the start; she seemed to churn the water without going ahead. Mirna was gradually coming up to Chelwood but not fast enough to save her time.

"Ruf" Lenning and "Doc" Street were watching that Dream like hawks, and fifteen minutes after the start the latter yelled, "Ruf, we're licked!" This meant the defeat of Chelwood and the birth of another wonderful boat and prize winner. Forty-five minutes after the start Dream passed Chelwood, and Mirna held a lead of one minute.

The run out to North East End Light Vessel was delightful. We called our number and name of boat and took a picture of the light vessel, and then threw the daily paper on board, which pleased the men. We found Dream three minutes in the lead and Mirna still one minute ahead of Dream.

On the run to Winter Quarter Shoals Light Vessel, 65½ miles, we passed within ¾ mile of Five Fathom Bank Light Vessel and, later, within three miles of Fenwick Shoals Light Vessel. During the afternoon we took sights for longitude and in the evening shot the stars for practice as all the Chelwood's crew were going to Bermuda on the Kathemma.

Promptly at 1 P.M. the four finest cruisers of this section started in Class A over the course to battle for the big prizes given by the Yachtsmen's Club of Philadelphia. Com. A. B. Cartledge of the Keystone Yacht Club had the honor of sending his Marguerite II over the line first. Maraida followed and Caliph crossed third. The new boat of Capt. Geo. Fish, Luegeo II, made a beautiful sight as she passed the pier full speed ahead and only half a minute astern of the others.

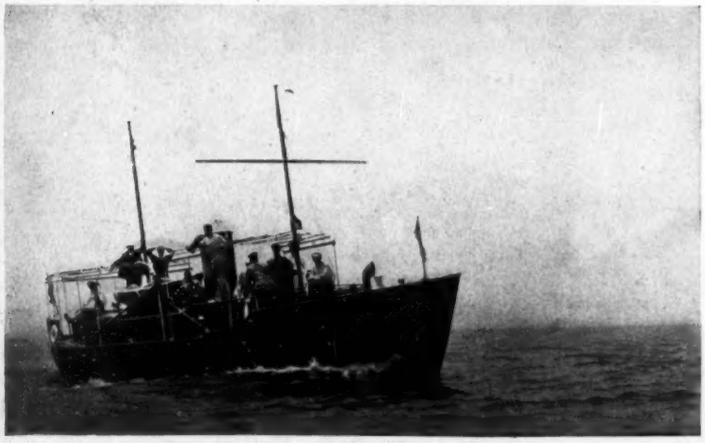
Marguerite II was certainly an eye opener to the racers. She seemed to say "Good-bye, fellows, I'm in a hurry, I must be back here 2 hours and 48 minutes before you are, or I will not win that big prize." An hour later she was out of sight. Maraida held second place. About this time Luegeo II cut into a shaft bearing some fifteen feet from the engine and stopped. She lost considerable time before the accident could be repaired, and her boys had about decided to return to the club, but they thought better of it and took a joy ride, as they called it, to see if anything else would give way, as Luegeo II will enter the Bermuda race.

On Chelwood we made bets that Marguerite II would pass us at 7 P.M. just as we had Fenwick Shoals Light Vessel abeam. "Ruf" Lenning won the bet as Marguerite II passed to the minute, and we saluted. Night came on and the port watch was ordered below until 12 o'clock.

About 9 P.M. we saw the big boats coming up astern, and we wondered which of them would pass us after Marguerite II. Maraida proved to be the next boat and we gave her the time of Marguerite II ahead of them. She went off in the darkness like a streak, leaving us a big stern light to follow. "Doc" was at the wheel and he promptly put out the binnacle light and steered by Maraida's light for just five minutes; then he switched on the light again and found Maraida was heading for the gas buoy some three miles inshore of Winter Quarter Shoals Light Vessel. Off to starboard Caliph was heading the same way, so we felt that somebody was going to have a fine time hunting up that big red lantern on Winter Quarters Shoals Light Vessel.

It is quite natural for amateurs to follow a faster boat, especially when they know a recognized navigator is aboard. We had been caught once that way and it was enough. We trusted our compass and sailed where it pointed, letting Maraida and Caliph do as they pleased. Answer—Chelwood picked up Winter Quarters half a point to port and, later, saw Maraida turn broadside to and make for it. Then Caliph woke up and headed for Chelwood, coming with port and starboard lights showing fair to us while we showed them our green. She must have been off three or four points. Maraida passed Winter

(Continued on page 128)



LUEGEO READY FOR THE START

WHAT THEY PICKED UP IN THE FOG.

The Successful Auxiliary

How to Go About Installing Power in the Medium-Sized or Small Cruiser. Some Hints on the Most Suitable Types of Boats

By H. P. JOHNSON

PART II

WHETHER the motor be two or four cycle I will let you decide—both are suitable and both have particularly attractive points, but whatever type is selected it should turn at moderate speed, and must be fitted with a reverse gear or reversing propeller.

A high-speed motor is of no practical value in a heavy boat at low speed. The propeller must be of very small diameter, in order to allow the motor to develop its power, and in such a boat the water is so disturbed by the hull and deadwood that the wheel cannot get sufficient solid water to work in properly. Then the pitch must be very small in order not to waste power excessively, and a wheel in which the pitch is smaller than the diameter in inches does not produce satisfactory results under any conditions.

A high-speed wheel will only churn the water in starting and backing up, until headway is gathered in either direction, and this is the very time when a quick response to power is necessary. The same reasoning applies when the boat happens to stick in the mud—the high-speed outfit being entirely useless.

The motor should not turn above 450 R. P. M., which will give a wheel of large diameter that will do well at the lowest speeds, and the blades will be big enough to reach good, solid water around the deadwood.

A two bladed is the only type of solid wheel that should be used, although there are several feathering wheels in which the blades offer very little resistance when the power is not in use. With the solid wheel it is not necessary to taper the stern post away to a fine edge, as is motor boat practice, and the wheel should be set rather close to the woodwork so that when the wheel is lined up behind the post it offers very little resistance. The loss of solid water coming to the propeller by reason of the thick deadwood may be offset by the increased length of the blades made possible by this very fact. The work done by the blade tips is far more effective anyhow than that done by the portion near the hub.

An outfit which does not allow of positive and instant reversing of the wheel does not belong in an auxiliary. You will find that the motor will be used a great deal in making landings and in crowded places, and you cannot take chances on reversing the motor or stopping it and running on headway as is possible in a small power boat. When you have from six to sixteen thousand pounds of boat to handle, even though she be only moving at two or three miles per hour, something is going to be doing when she hits, and at such times it is a real man's sized job to keep her from hitting.

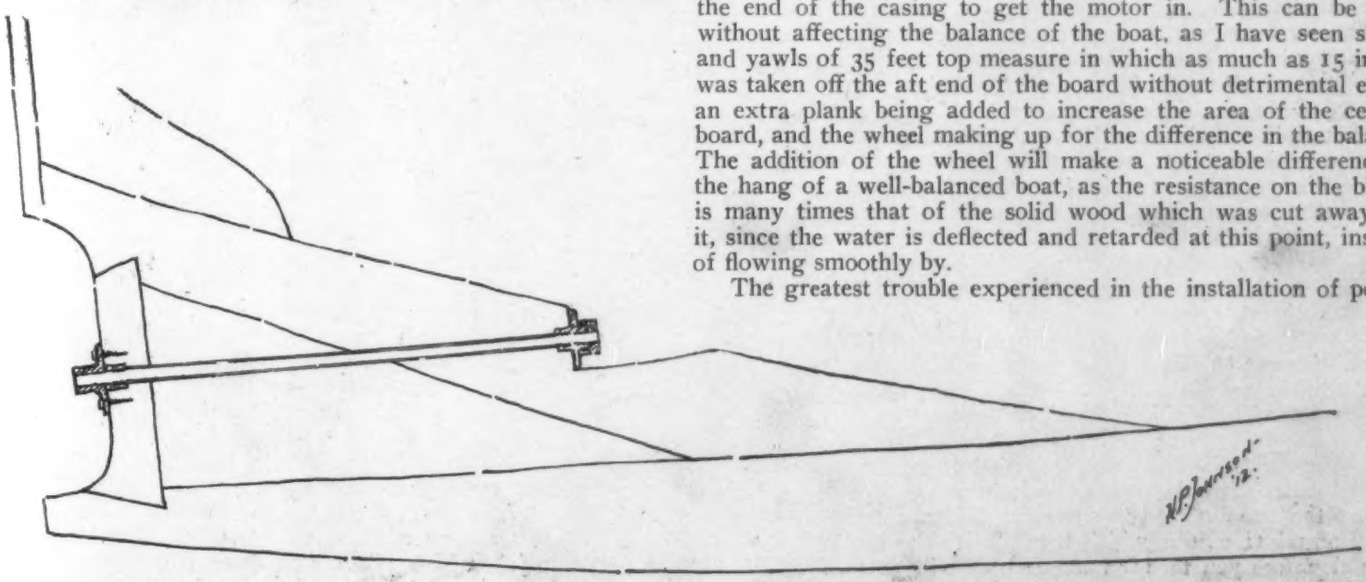
Now then, supposing you are going to install power in a boat not especially designed for it. Keel boats are generally comparatively easy, for one may make certain compromises in the cabin arrangement to work the deal.

Building in a bridge or raising the cockpit floor are not expensive stunts, and are always worth what they cost. If, owing to the angle at which the shaft must be run through the deadwood, the motor must be set so as to bring the cylinder top too high a universal coupling may be placed in the shaft, just abaft the gear, allowing the motor to set level, thus saving several inches in the height of the motor.

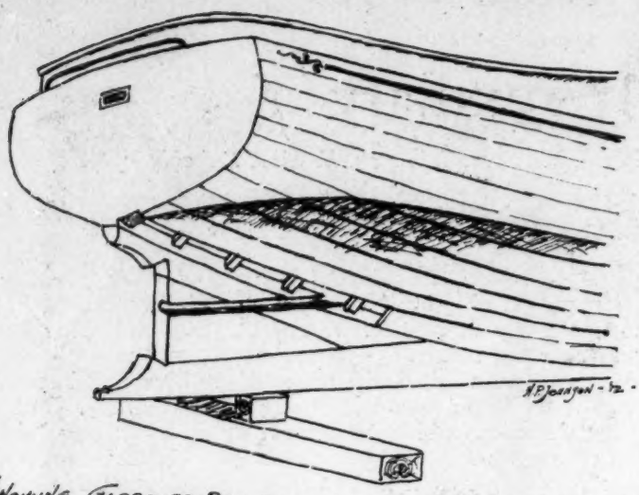
The loss of power through this universal is not worth considering but the space saved is often quite an item. In centerboarders the job is not so easy, owing to the everlasting casing.

Cat boats are usually deep abaft the casing, and it is simply a question of how high the motor will come and whether it can be covered by a flush hatch, or if the cockpit floor must be raised. In yawls and sloops the boat is generally not very deep abaft the casing, and it often becomes a question of cutting off the end of the casing to get the motor in. This can be done without affecting the balance of the boat, as I have seen sloops and yawls of 35 feet top measure in which as much as 15 inches was taken off the aft end of the board without detrimental effect, an extra plank being added to increase the area of the centerboard, and the wheel making up for the difference in the balance. The addition of the wheel will make a noticeable difference in the hang of a well-balanced boat, as the resistance on the blades is many times that of the solid wood which was cut away for it, since the water is deflected and retarded at this point, instead of flowing smoothly by.

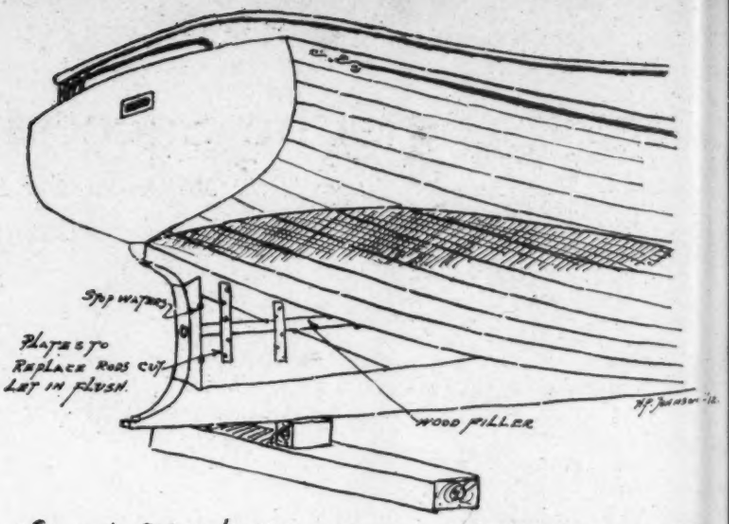
The greatest trouble experienced in the installation of power



AN ABSOLUTELY TIGHT JOB IS POSSIBLE BY MEANS OF A PIPE SCREWED INTO BOTH STERN BEARING AND STUFFING BOX.



SHOWING GARBOARD REMOVED AND CHANNEL CUT FOR SHAFTS IN AN OLD CATBOAT.



SHOWING CHANNEL FILLED IN, AND PLATES WHICH TAKE THE PLACE OF RODS WHICH WERE CUT AWAY

in old boats is in opening the shaft hole. The rods which are driven through the deadwood are not easy to locate, as they may be driven through all the members, or through each other alternately, and the chances are that they are all practically driven on the center line through which the shaft must pass. Boring through the wood and taking chances on drilling through an occasional rod is an uncertain and dangerous proceeding. In the long run the most satisfactory job is obtained by taking out a piece of the garboard on one side, and cutting a channel through the deadwood to the center, opening up the line for the shaft. Thus any bolts which are not directly in the shaft line may remain, and the others be cut off. Often the shaft hole is cleared, a new stern post is put in, and the face of the deadwood filled in with a strip of wood and made tight.

The garboard is then replaced and on the outside of the deadwood heavy straps are sunk in flush to take the place of any bolts that may have been cut. Such a job can be made absolutely tight by means of a sleeve screwed to both the stern bearing and stuffing box. In a straight bored shaft hole you will have to take chances on a permanent leak which often develops through shakes and heart splits in the deadwood, which are very often found in heavy timbers and are impossible to locate.

It is sometimes possible to place the propeller to one side of the deadwood without getting it so far from the center line of the boat as to make her steer badly under power. One way of doing this is to run the shaft out fairly close alongside the deadwood and then cut away an aperature in the latter to permit the revolution of the blade. This arrangement will, of course, bring it about that the efficiency of a fairly large segment of the turn of the wheel is impaired by the fact that the blades have to act upon disturbed rather than "solid" water. On the other hand, however, there is a portion of the revolution through which each blade gets a shove against water which is *entirely undisturbed*, and this is more than can be said for the propeller which is set directly behind the deadwood—unless of unusually great diameter for the thickness of the deadwood.

One point to be borne in mind in locating the propeller to one side in this manner is that it can be so managed as to offset the tendency of a screw propeller to throw the vessel's head to one side. Thus, a right-handed wheel (i. e., one which turns "with the hands of the clock" as you face it from astern) will cause a vessel's head to turn to port, for the reason that the blades get a better grip of the water in the lower than in the upper semi-circle of each revolution because the deeper water is more solid. Now, if the propeller is placed on the port side of the deadwood the effect of the thrust coming on that quarter will tend to equalize this sling of the screw and the results will (or may) be a better balanced boat than one with a single propeller set in the center line.

A heart shake which cannot be detected from the outside will let water in through following the seams if a shaft hold is bored through it.

The condition under which an offset wheel can be used to best advantage, however, is when the rudder is sufficiently deep—as in racing sloops—for the wheel to be shoved out past the deadwood altogether and still clear the top of the rudder even when it is put hard over. In this case there is, of course, no cutting away of the deadwood to be done.

Sometimes it may be practicable to approximate this condition by cutting away the top of the rudder and adding to its width to make up for the reduction in area, but this usually will only work well with a sloping shouldered rudder.

Interior difficulties of construction may be encountered, especially in a narrow boat, when one attempts to move the engine bed a few inches to one side of the centerline. In this case the engine can often be left in the center of the boat but turned slightly so that the shaft will make a small angle to the fore-and-aft center line of the boat as viewed from above. It requires only a very slight turn to bring the shaft out clear of the keel, unless the engine is set extremely far aft.

Where the shaft comes out through the garboard a substantial inside shaft log is set in for it to pass through. This is bolted to the keel, and the garboard butts up against it, so that there is no weakening of the structure of the boat. It makes a much more substantial job than that which one gets in a twin-screw installation where the engines are set far apart and the shafts come out simply through a butt in the planking.

That portion of an offset shaft which is outside of the boat must be supported by a strut to the deadwood—this strut being close up to the propeller and between it and the boat. A feathering propeller must be used, for it cannot of course be lined up behind the deadwood, as is the usual case. Also, it must be borne in mind that there will be some drag on the part of the strut, but in spite of these losses in efficiency the greater simplicity of construction in installing an engine with the shaft alongside of the deadwood is such that it has become a favorite method for large and small auxiliaries alike.

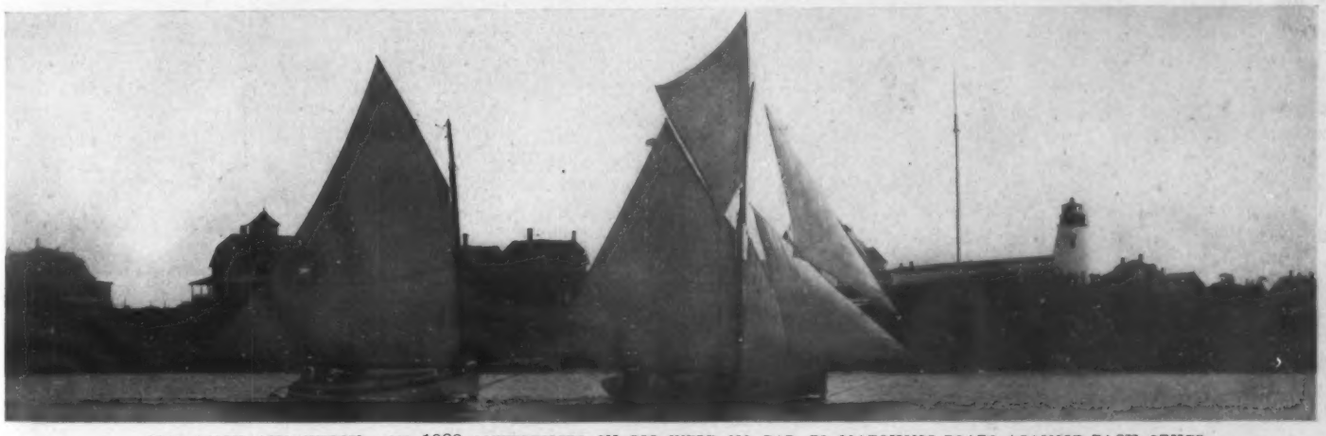
The great thing to bear in mind when one comes to make over his boat for power is that he is tackling a job, which, if not well done, is likely to damage almost beyond repair what may have been a good, satisfactory sail boat. There is not on the high or narrow seas such a miserable, exasperating and altogether soul destroying packet as a crate which can *neither* steam nor sail. Therefore it is absolutely essential to know thoroughly your boat's construction.

The Last Thirty Years in Yachting

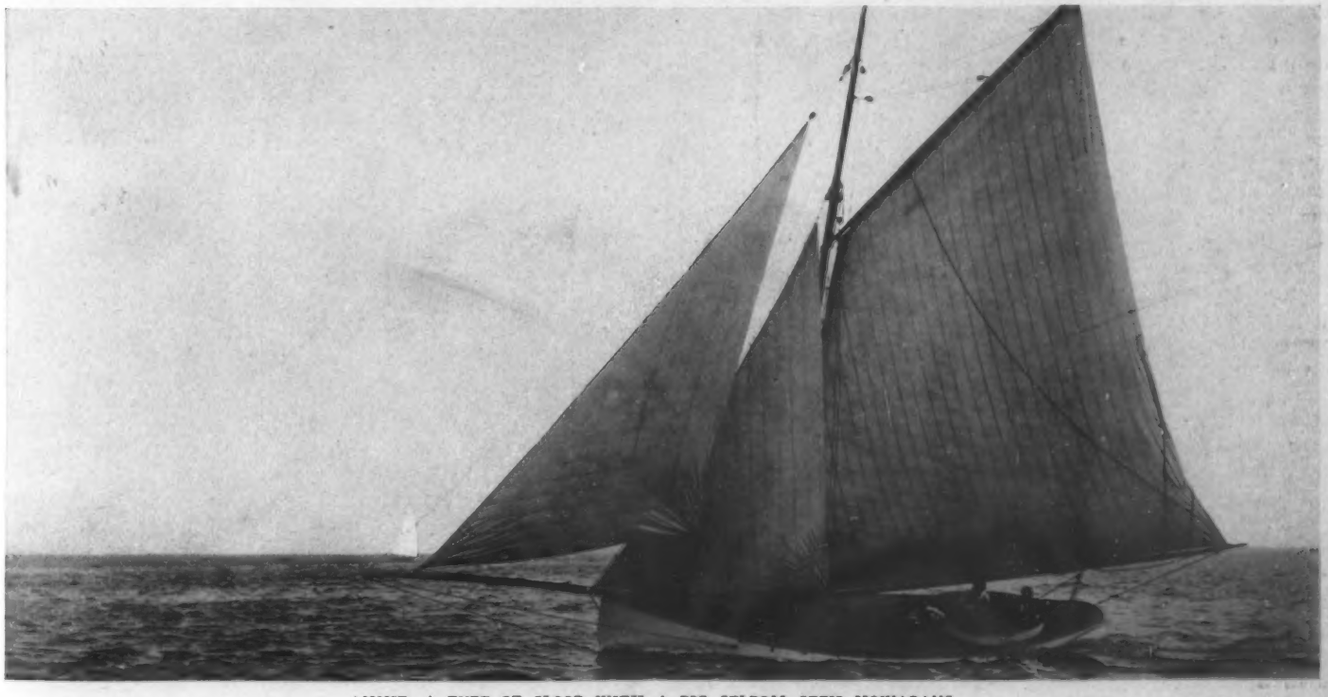
The Period from 1888 *to the early* '90's.

PHOTOGRAPHS BY N. L. STEBBINS AND OTHERS

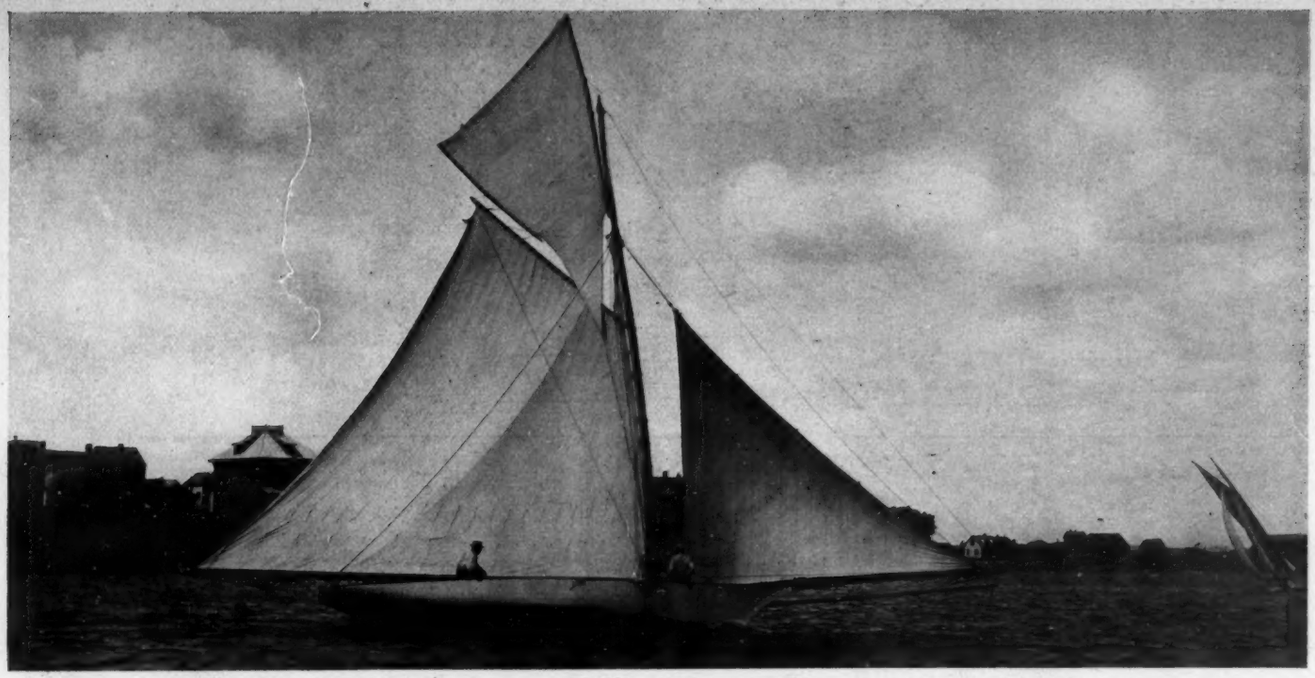
TOM CAT, A CENTERBOARD RACER OF 1888 WHICH LOOKS OVER-CANVASSED TO OUR MODERN NOTIONS.



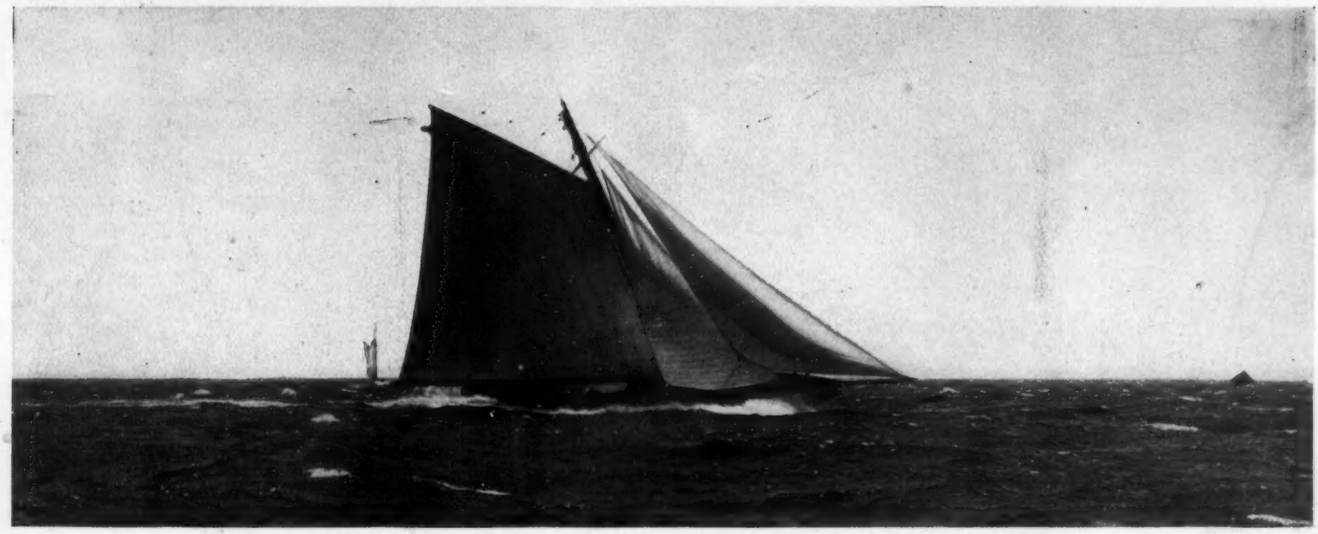
GOOD LUCK AND WITCH. IN 1888 DIFFERENCES IN RIG WERE NO BAR TO MATCHING BOATS AGAINST EACH OTHER.



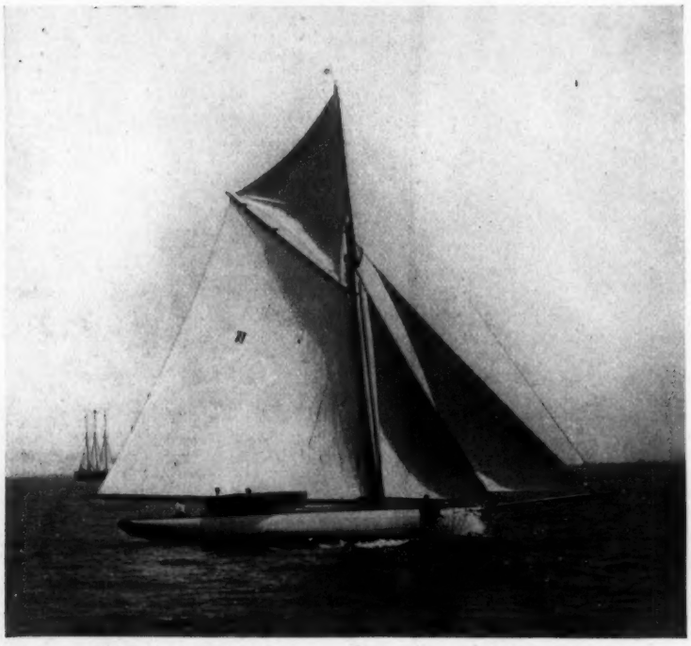
ANNIE, A TYPE OF SLOOP WITH A RIG SELDOM SEEN NOWADAYS.



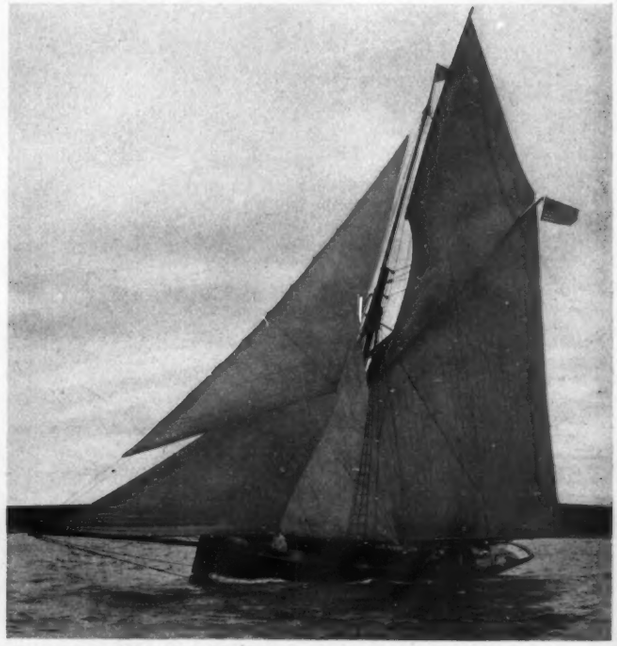
SWORDFISH, 1888. ONE OF THE FIRST OF THE SMALLER SLOOPS TO USE THE CLIPPER BOW AND LONG OVERHANG AFT.



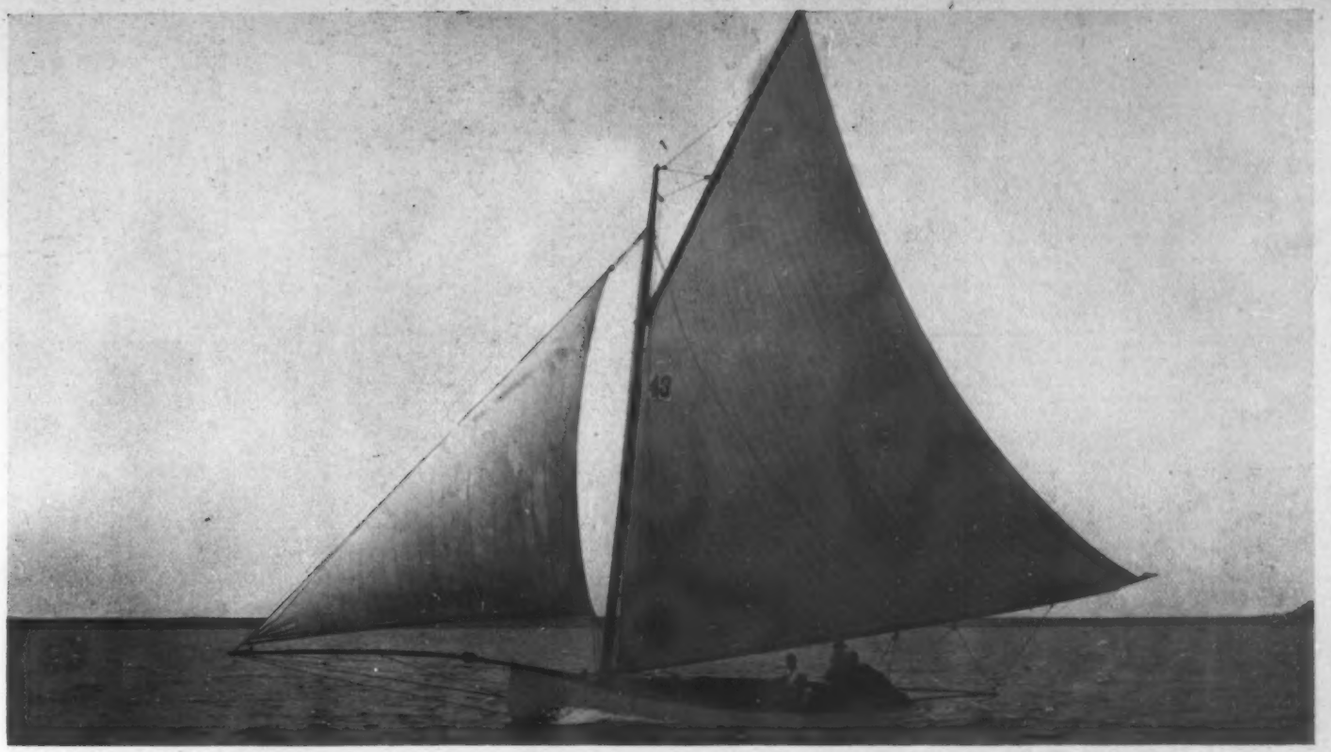
A "DUSTY" ROAD. ATHENE, WITH TOPMAST HOUSED, LUGGING ALL SHE CAN CARRY.



NAROUNYA, AN EXCELLENT MODEL OF THE LATE 80'S.



EDITH, 1889—AN ADAPTATION OF THE ENGLISH CUTTER.

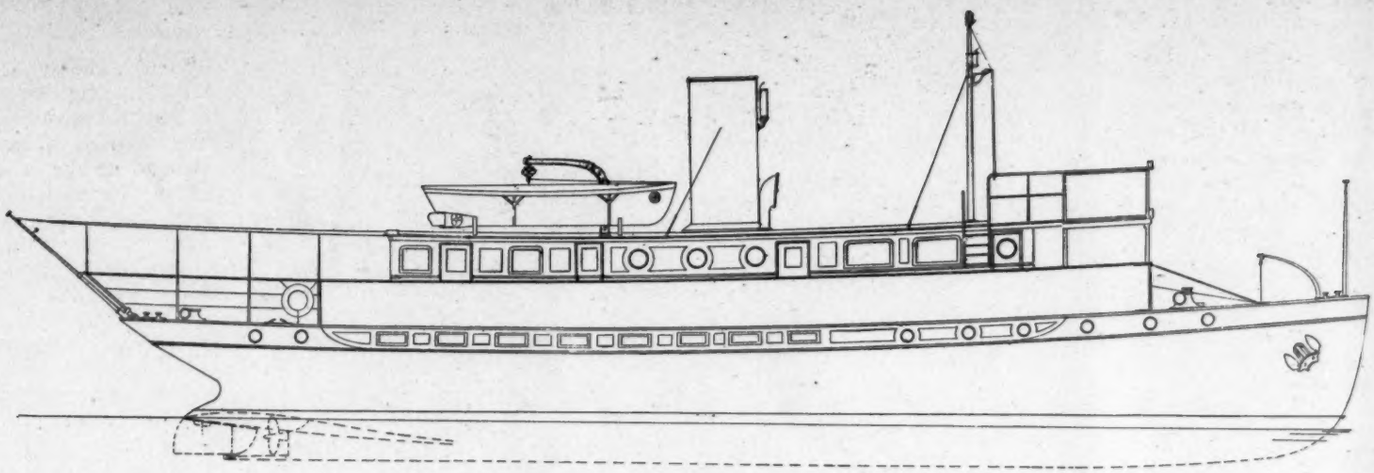


TROUBLE, 1888. A LONG "HORN" AND MAIN BOOM MADE SAIL HANDLING MORE DIFFICULT THAN AT PRESENT.

THREE FAMOUS RACING SCHOONERS OF THE LATE 80's; SACHEM, ALERT, GRAYLING.

WIDGEON, 1888, A TYPE OF SCHOONER NOW PRACTICALLY EXTINCT.

WHILEAWAY AND REGINA, RACING SLOOPS OF 1889.



A Unique Houseboat

THAT a houseboat may have all the roominess and comfort which the word implies and still resemble something more nearly allied to a ship than a car ferry or Noah's Ark, is demonstrated by the drawings from the board of Swasey, Raymond and Page, of Boston, which we reproduce on this page. The boat is 78 feet over all, 69 feet on the water line, and has 17 feet beam and three feet draft.

She is driven by triple screws and is built with a tunnel stern, as the elevation shows, in order to keep the draft as shallow as possible. In canals and narrow rivers the center engine alone will be used, while any speed up to the maximum may be attained by bringing the other two into service.

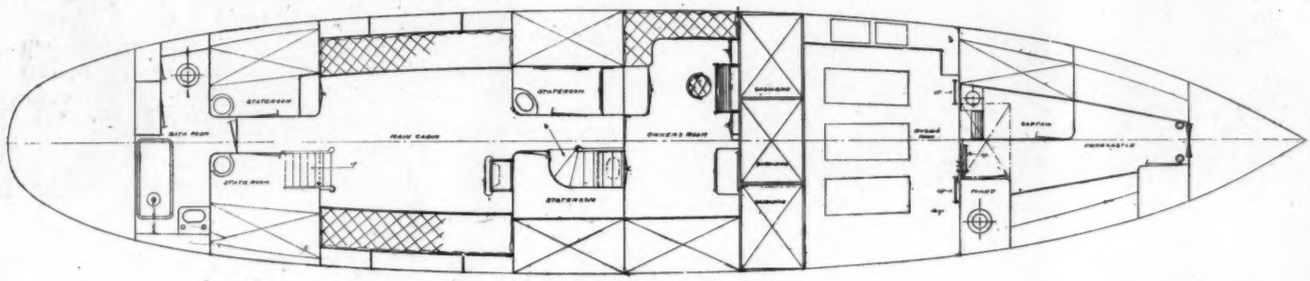
The arrangement plan indicates ample accommodations for the comfort of a family, yet everything is on a large scale and without crowding. On the upper deck (not shown here) there is a large dining saloon occupying the whole forward half of the superstructure with windows on three sides. Aft of this are pantry, galley, store room and an extra large ice box.

On the main deck, as shown below, there is a large bath room aft, communicating with a corridor on either side of which is a single stateroom. Then comes the roomy main cabin 20 feet long and taking the full width of the ship—this in addition, it will be remembered, to the dining saloon above. There are full length transoms on both sides of this main cabin which may be used as berths when needed.

Forward of this again are two more staterooms, and next to them is the owner's room—a combination of bedroom and study extending across the boat at her widest point and furnished with a desk, bookcases and lounge in addition to the berth and lockers.

Between the owner's room and the engine room is a bulkhead space, having its own special ventilators, where the gasolene tanks are installed.

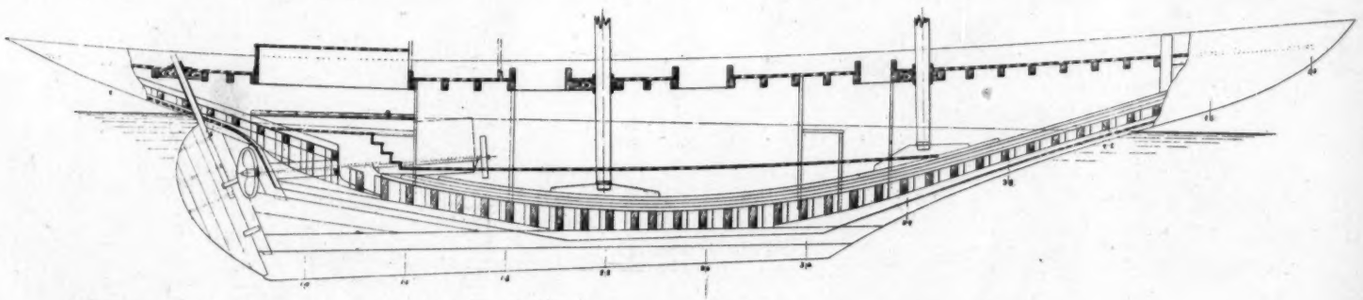
The captain's room is just forward of the engine room on the port side and the remainder of the space is taken up in a roomy forecastle for the two or three deckhands who comprise the crew.



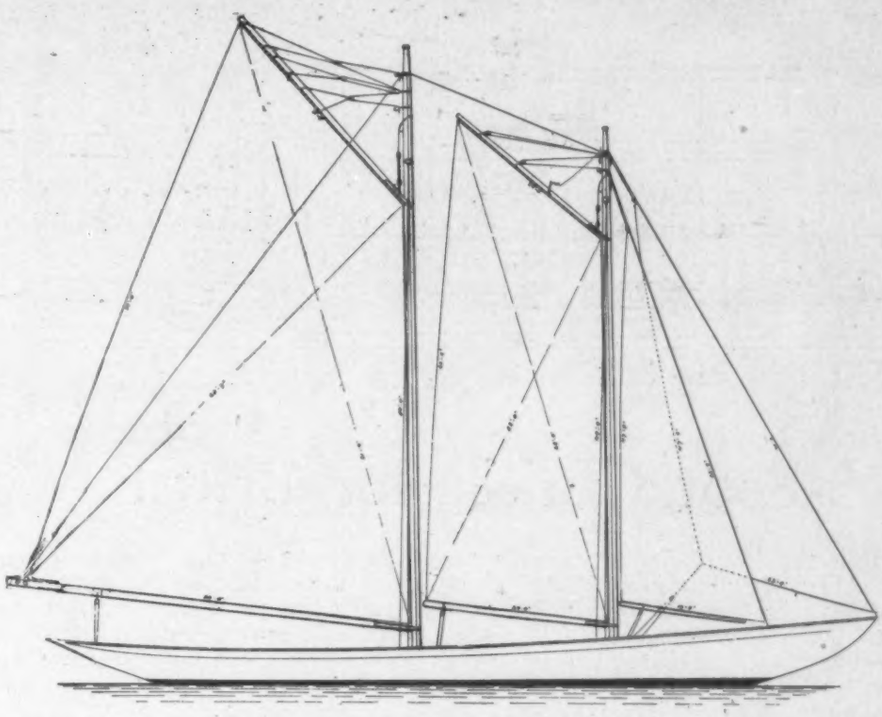
Fast, New Schooners for "Green Fishing"

THE accompanying plans are those of a fleet of knockabout fishermen, six of which are now being built from designs furnished by Messrs. Cox and Stevens, of New York. These vessels represent the very latest development of this type of fishing craft and are of the following dimensions: Length over all, 107 feet 9 inches; waterline, 76 feet 9 inches; beam, 22 feet 3 inches; draft 13 feet 0 inches.

The owners in ordering these vessels had in mind securing the



fastest possible boats consistent with good carrying power and seaworthiness. An inspection of the plans shows that the designers have worked this problem out carefully. The sections are powerful and yet easy, the vessel has plenty of freeboard, a lively sheer and moderately long ends. The construction adopted is in accordance with the best practice for vessels of this type, no expense being spared in any direction as to quality of material or fastenings. The keel, stem, stern timbers and frames are to be of oak, the planking of yellow pine.



Bearing in mind the great importance of reaching port quickly with a catch, each of these vessels is to have installed a 90-H.P. internal combustion engine capable of using either gasolene or heavy oil. These engines will drive the boats at a speed of better than eight knots under favorable conditions. The knockabout schooner rig has been adopted because this has been proved by experience to be the most desirable for fishing craft, as all sail is inboard. In order to facilitate still further the handling of the vessels it was decided to rig them with pole masts. This is a sensible plan for the reason that in heavy weather they cannot carry light sails, while in light airs the engines will drive them faster than they could sail.

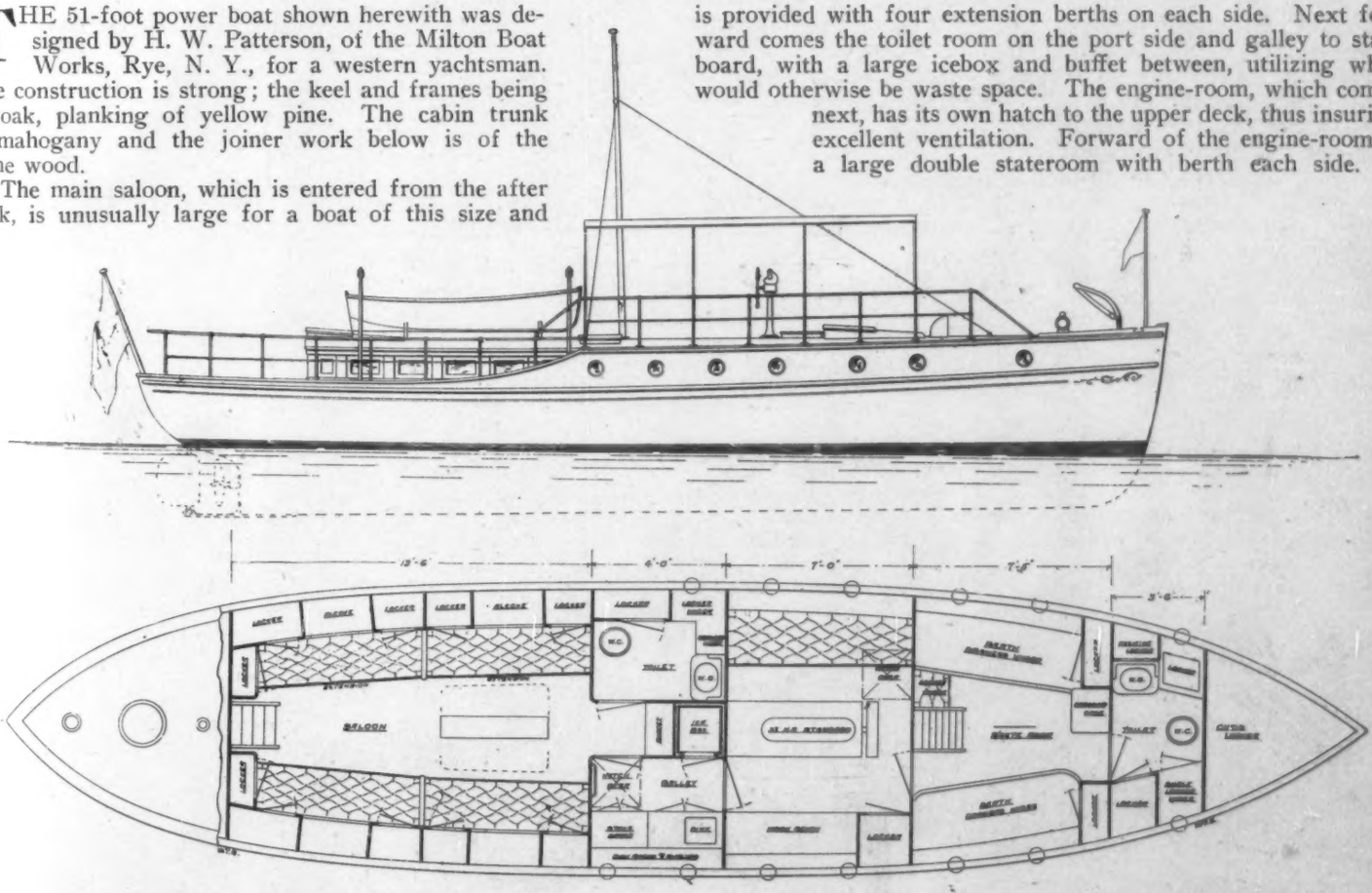
These schooners are not built with fish wells, but carry the fish in eight separate ice-houses amidships, accessible through hatches on deck. The accommodations aft consist of a large galley with quarters for four men, and the forecastle has additional accommodations for six hands.

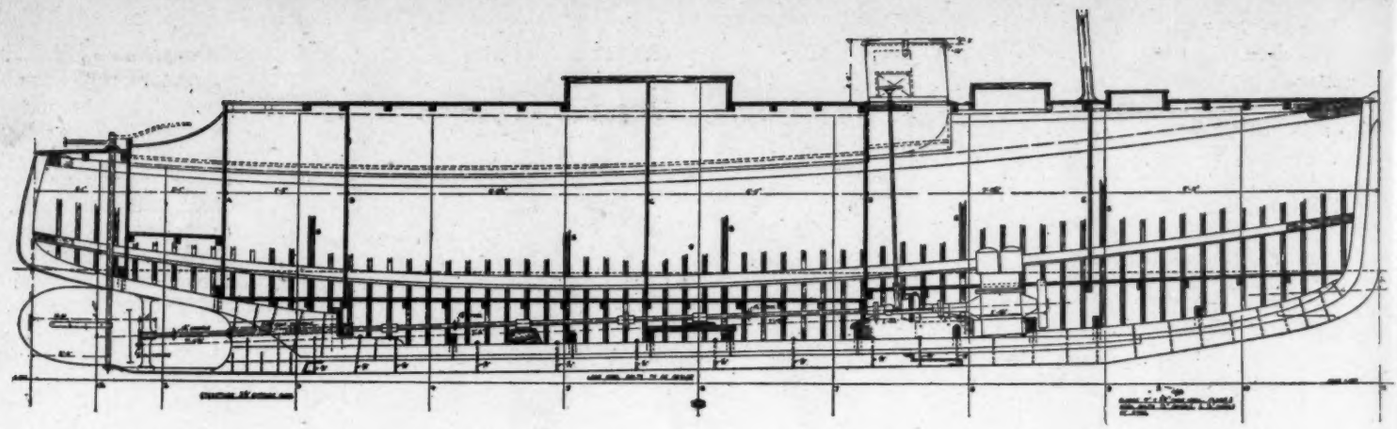
This large order for fishing vessels is an indication of the prosperity of this particular industry.

A 51-Foot Power Cruiser

THE 51-foot power boat shown herewith was designed by H. W. Patterson, of the Milton Boat Works, Rye, N. Y., for a western yachtsman. The construction is strong; the keel and frames being of oak, planking of yellow pine. The cabin trunk is mahogany and the joiner work below is of the same wood.

The main saloon, which is entered from the after deck, is unusually large for a boat of this size and is provided with four extension berths on each side. Next forward comes the toilet room on the port side and galley to starboard, with a large icebox and buffet between, utilizing what would otherwise be waste space. The engine-room, which comes next, has its own hatch to the upper deck, thus insuring excellent ventilation. Forward of the engine-room is a large double stateroom with berth each side.





A 43-Foot Cruiser for British Waters

AN interesting addition to the fleet of English motor yachts is the 43-footer, Quickfirer, the plans of which appear on this page. The boat has been built for Col. F. M. Close, R.A., from designs by Mr. James A. Smith, M.I.N.A., of London, and will be used chiefly on the Channel. This service requires an able, seaworthy boat capable of standing some severe handling, and the accompanying drawings show that the desired qualities have been secured.

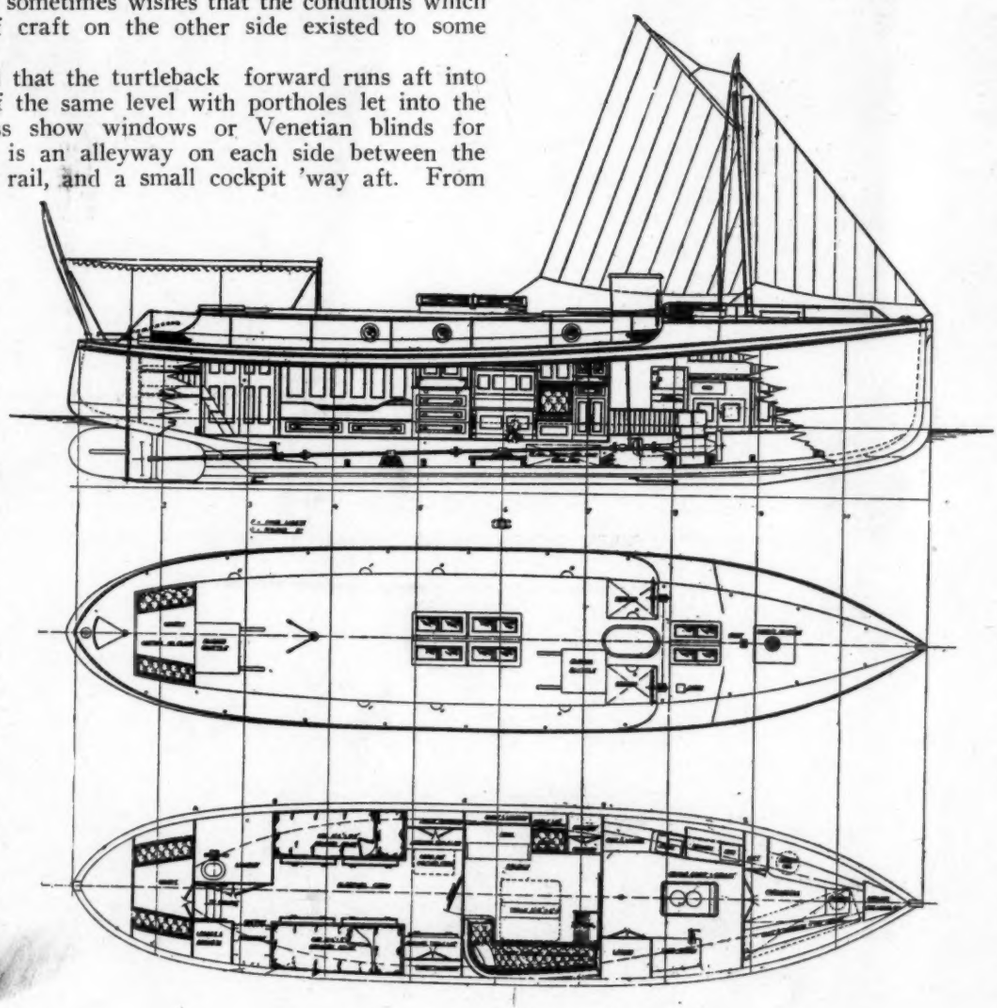
With practically no overhangs, but with good beam and heavy scantlings, Quickfirer is a boat that should be able to go unscathed through about any sort of tumble which old Aegir can muster up. One sometimes wishes that the conditions which develop this type of craft on the other side existed to some degree here.

It will be noticed that the turtleback forward runs aft into a low cabin trunk of the same level with portholes let into the sides—no plate glass show windows or Venetian blinds for this packet! There is an alleyway on each side between the cabin trunk and the rail, and a small cockpit 'way aft. From the latter a companionway leads down into a passage having at its after end a large lavatory on the port side with lockers opposite. Then comes a sleeping cabin, the full width of the boat—8 feet at this point — furnished with two large beds, toilet, cupboards and a writing table.

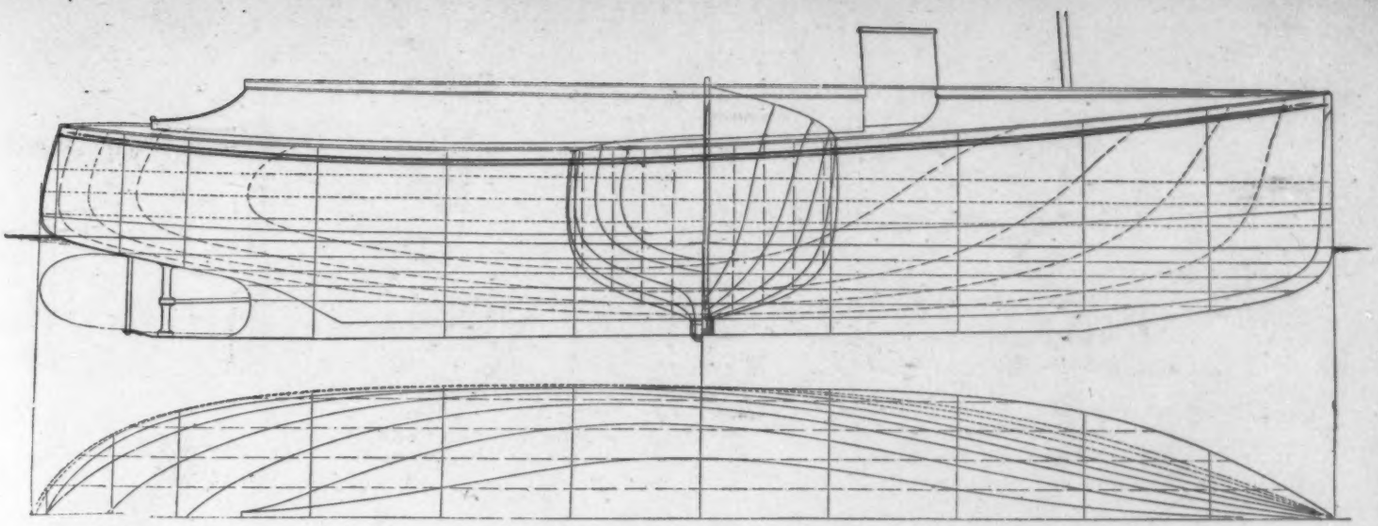
The next compartment is the saloon. A comfortable settee upholstered in leather is built in on the starboard side and may be used as a sofa berth when required. A folding table 3 feet square is fitted on the starboard side against the settee.

Access to the deck is gained by means of a ladder and sliding hatch, while a sliding door gives communication with the motor-room through the bulkhead. A fore-hatch is provided for use of the crew, and as the motor-room and forecastle are in communication through double-hinged doors the sliding doors may be closed at night, and the vessel thus divided into two separate parts, for occupation by passengers and crew respectively.

The motor-room is 7 ft. in length, with a mean width of about 7 ft., and is made to serve as galley also. The machinery installation consists of a two-cylinder 20 H.P. Detroit paraffin engine, fittted with Langdon reverse gear, and running at 500 r.p.m.



It will be noticed that the construction of the keel is rather unusual, and certainly excellent in many ways. The midship part is carried straight out to the propeller aperture aft, and the after portion is cut as a fashion piece, having a step at its forward end to accommodate the stuffing gland. Thus, no inside or outside chocks are required. In every respect the construction plan shows a vessel of great strength, which will undoubtedly withstand many years' service. The following are the scantlings:—Keel—pitch pine, 6 in. moulded, and sided to suit lead keel, rabbeted for planking; stern, sternpost and deadwoods are of American elm, steam bent, 1½ in. by 1¼ in., spaced 7½ in. apart from centre to centre, each extending from keel



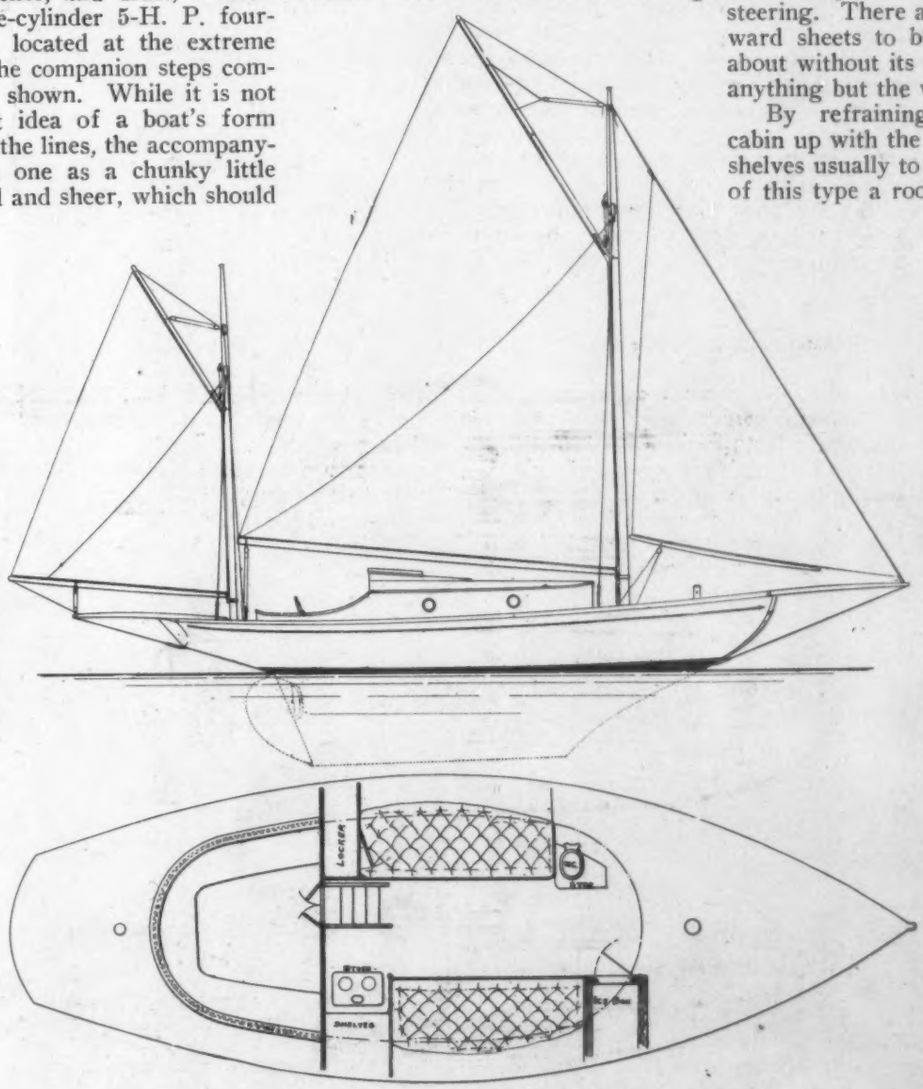
to gunwale in one piece, and jogged into keel. Strong frames—five in number, English oak crooks, 3 in. by 3 in., strongly side-fastened to the floors. Floors—English oak, of size and spacing as shown on detail plans. Bilge keels—pitch pine, 4½ in. by 2½ in., fastened at each floor with a copper through bolt, and with brass screws between the floors. Planking, ⅞ inch teak.

A 30-Foot Single-Hander

THE 30-foot auxiliary yawl here illustrated was designed and built by the Milton Boat Works, Rye, N. Y., as an ideal single-handed cruiser. Her waterline length is 21 feet; beam, 10 feet 6 inches, and draft, 4 feet 6 inches. The engine, which is a single-cylinder 5-H. P. four-cycle gasolene motor, is located at the extreme after end of cabin with the companion steps coming down at the side, as shown. While it is not possible to get an exact idea of a boat's form without being able to see the lines, the accompanying elevation shows this one as a chunky little craft with good freeboard and sheer, which should be able to give a good account of herself in a "dusting."

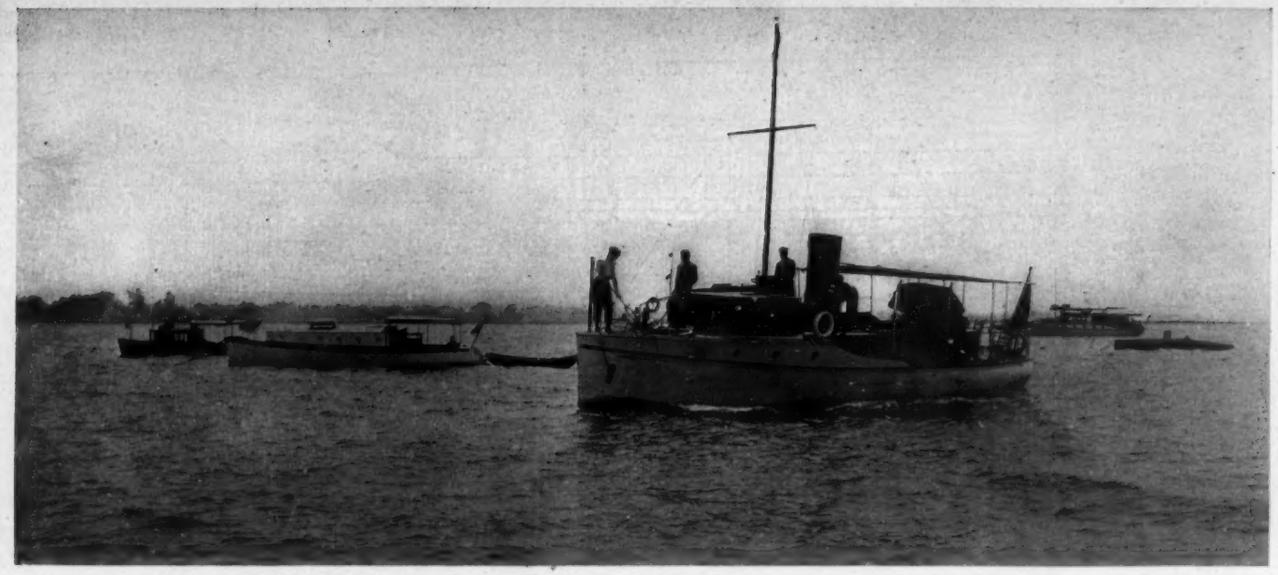
Extreme simplicity has been the keynote of success in both design and arrangement. The overhangs are short and raking and the boat's general appearance suggests a combination of fair speed with excellent "sloppy" weather qualities. There is nothing on deck to be damaged by a little green water and the high cockpit coaming should make her dry and comfortable for the crew.

A deep forefoot and long keel will enable her to hang on well in a windward thrash and at the same time be easy to steer before a following sea, which is the most trying point of sailing in most small craft, although to offset somewhat these two excellent qualities she will probably be rather slow in stays. However, one cannot expect to have everything in the same design. The jigger is large enough to balance with the jib so that the mainsail can be lowered and furled altogether in a squall without upsetting the boat's steering. There are no windward and leeward sheets to bother with—she will go about without its being necessary to touch anything but the wheel.



By refraining from lumbering the cabin up with the innumerable lockers and shelves usually to be found in a small boat of this type a roomy and comfortable living space has been secured. There is a wide full length berth on each side of the cabin and room enough to move around in between them. The oil burner stove has wisely been put at the after end of the cabin (where the heat and smell will pass out through the hatch) instead of being stowed away after the usual fashion somewhere up in the forepeak where there is no head room and less ventilation.

While the beam may seem excessive to the sailor accustomed to racing craft, which usually show a proclivity for sailing "on their ear," it will be found a most desirable feature when one gets off soundings. There is nothing so trying on one's nerves and temper as to try to make an extended cruise in a narrow boat.



KATHEMMA, COM. WILLIAM SMITH'S RACER, WON THE SECOND PRIZE IN CLASS B. SHE WILL BE A STARTER IN THE BERMUDA RACE.

The Overfalls Lightship Long Distance Race

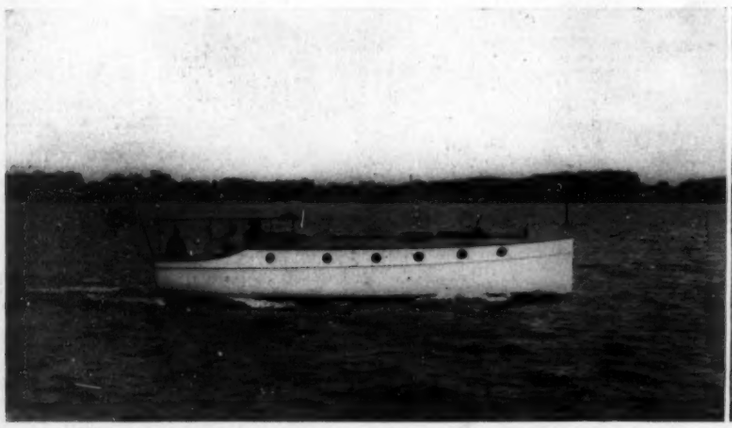
By DR. C. S. STREET

THE opening of the long-distance racing for the season of 1912 on the Delaware began with the race of the Keystone Yacht Club from Tacony, Philadelphia, to Overfalls Light Vessel and return, a distance of 190 nautical miles. The Regatta Committee of the Delaware River Yacht Racing Association called the racers to the Keystone Club at noon, Friday, June 21st, and announced that the first boat to leave would be the Chelwood, owned by Rufus Lennig, at 5.30 P. M., the boats being started on their handicaps.

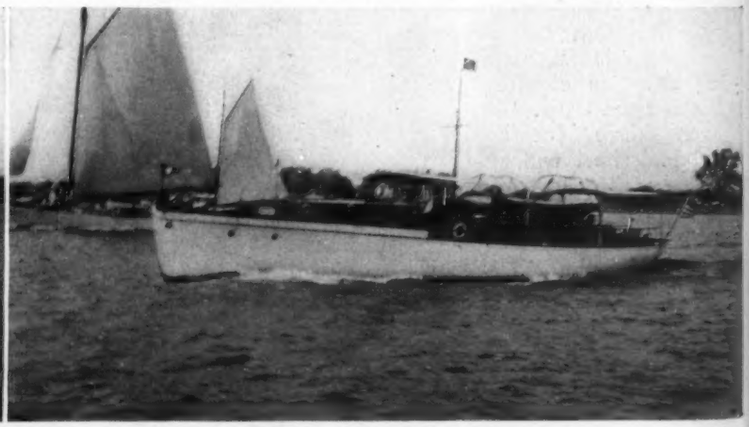
"Plenty of time to visit all the boys," sang out Commodore Howard Dudley and Austin Clark from their boat, the Haji. This, of course, started something and away went the boys in their little yawls to visit the commodore of the club, A. B. Cartledge, and his Marguerite II.

Many of the yachtsmen were anxious to see the new boats that had been built to give Chelwood a race, so away they went for Dr. Drexler's Clare III and Commodore Wm. Erb's Casino. Dr. Eugene Swayne was another center of attraction with his new Eugenia,—a boat of similar model to Pickaninny but with little more power. Off to starboard of the fleet lay the Hyacinth, a newcomer to the sport, belonging to John A. Morgan, of the West End Club, of Chester. All the boys made her a visit to see the new engine and have a talk with her congenial owner. Mary C, the crack Camden Motor Boat Club racer, was anchored astern of the Kathemma and she came in for a lot of admiration, as she has been a constant racer ever since Mr. Martin McWilliams has owned her.

Last instructions were given at 4 P. M.; then the fleet blew for their crews and all hands waited patiently for the committee boat to send off Chelwood. She made a fine sight as she rushed the line to the second when she finally got her gun. "Go to it, Chelwood," came from her admirers as she passed the stake boat amid the howling of the crowd and tooting of whistles. Pickaninny was next off, with a good cheer and plenty of racket, but Chelwood was out of sight and the wise ones smiled a sly little smile. Adios got away at 5.57 and then came Dr. Swayne's Eugenia, 3 minutes later. She had one bully send off from the crowd and was picked by many as the winner. Next came the Marie W from the Camden Club. Mary C, the first Class B boat, was then sent off with her owner at the wheel and the men of the Kathemma looking on and wishing they were with her. Haji, Class A, a boat that had had little attention paid to her as she was rated high, came next with Commodore Howard Dudley at the wheel. When she shot the line it was an eye-opener to those who had never seen her go and it set the wise ones to thinking. Tillie A was off 2 minutes later; then came the second boat of Class B, Commodore Smith's handsome Kathemma, at 8 P. M. She crossed a trifle late but under full speed and soon passed out of sight. Hyacinth started 8.16 P. M.; Isabella II an hour later; then the Justina and the Budd.



CHELWOOD KEPT UP HER RECORD BY WINNING FIRST PRIZE IN CLASS A.



MARGUERITE II, WINNER OF FIRST PRIZE IN CLASS B.

CASINO WITH COM. WILLIAM ERB AT THE WHEEL.

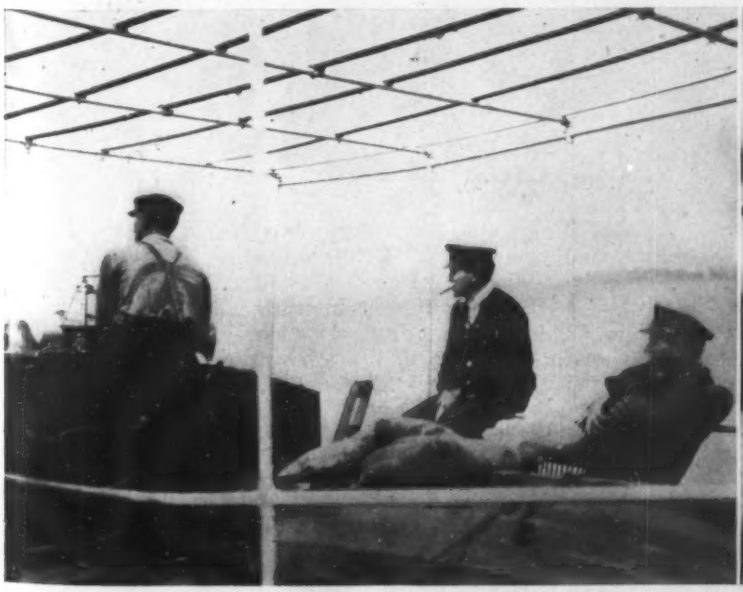
KEYSTONE YACHT CLUB, TACONY, PA.

Now for the Casino! She started 9.45 P. M. and the crowd gave her a great send off as she had to make up about four hours to beat the Chelwood. Fifteen minutes later the flagship of the Keystone Yacht Club, Marguerite II, the scratch boat of Class B, got her gun and the surprise of the evening came off. Just as she passed the stake boat the club members let loose with a lot of fireworks and all the shooting irons that could be borrowed or stolen for the occasion. The Commodore gave the crowd three long blows and went down the river with 4 hours and 40 minutes back of the Chelwood to make up. The last boat to start was the new racer Clare III, built to beat the fleet. She is the same model as Chelwood but has a 35-H. P. engine in her. She took the line at 10.11 P. M. with Dr. Drexler at the wheel and George Goldbeck on the job as navigator.

ROUNDING OVERFALLS LIGHTSHIP.

THE STORY OF THE RACERS

The crew of the Kathemma was split up into two watches, Commodore Smith taking charge of the starboard watch and "Doc" Street the port watch. The starboard watch took the boat over the line and the other boys kept well astern and did some fine kicking, as the tide was not yet ebb and they knew the fast Marguerite would be on their heels the second the tide turned. Caught the first of ebb tide at 8.45 P. M. and the Kathemma slipped along like a train of cars. Nothing happened but a good time; the watches were changed regularly and the ship ran into a fog at 5.45 A. M. Saturday. "Doc" insisted on keeping two men at the wheel, one to watch the other, so that if the steersman should vary a quarter point he could be jacked up. Steered a good course



THE CREW OF THE MARY C HAD A COMFORTABLE TRIP.

PICKANINNY FOLLOWING IN THE WAKE OF KATHEMMA.

through the fog and the Overfalls Light Vessel was turned at 7.06 A. M.

Met the Marguerite II soon after our turning the Overfalls and wondered at her great speed. She caught and passed Kathemma which gave her a salute as she went hustling up the bay after the leaders.

Luncheon was served about 1 P. M. and for dessert we picked up the Mary C and felt sure of winning second prize. Opposite Pea Patch Island Mary C and Pickaninny dropped alongside of us and we had a fight trying to shake them. We let the Kathemma go head on for a schooner that was coming down wing-and-wing and the way they yelled was enough to rattle anybody. But we held fair for the schooner's bow, thus forcing Mary C to go to starboard while the Kathemma went to port and lost the two boats. Headed for the starting line, feeling that the race had not been in vain. Passed the committee boat at 6.15 P. M., the fourth boat to finish out of a fleet of sixteen.

Marguerite II had a fine run of it and made fast time when she had the ebb tide. Commodore Cartledge was on the bridge the entire night. He said, "We kept three men on watch, as the river was full of boats, dredges and tugs. We used a searchlight a good deal and picked up many of the buoys with it. When we reached Overfalls Light we were surprised to find the Kathemma so close. She nearly ran us down as we passed her some half hour after turning Overfalls. It was a close shave and I believe the man steering was trying to get under our stern but he seemed to be tired out and could not do it.

"We are perfectly satisfied with the race and wish we had another one on some time this summer. The boys all turned out well and did their best to make the event a success."

"Haji had the best race of her life," said Commodore Dudley, her owner, "and I want to congratulate my first mate, Austin Clark, who took charge of the boat after we reached the Ledge Light. If the weather had been just rough enough to give the high-powered boat a chance we are sure the Haji would have won first prize. As it is, we finished some 23 minutes after Chelwood. This will stimulate us to tune the Haji up to the highest notch and we will be ready for the next race with some more speed."

Dr. Swayne says: "It was all my fault. I should have insisted upon following the ranges; then Eugenia would not have been aground for nearly an hour. Give us a little rough water and we will 'beat the stuffin's' out of Chelwood. The magneto was wrenched off the base when we struck and the boys had to rig up extra batteries. Then the engine would not turn up her regular number of revolutions."

"My new boat Clare III made the run in the best time, doing 190 miles in 20 hours 30 minute. When you consider the strong tide we met, the speed is very good, but we could not give the time to Chelwood, Pickaninny or Haji. We had a fine race with the Casino and think we showed up well when you consider that she had 26 minutes lead at the start and only beat us home by 8 minutes," said Dr. Drexler.

Commodore Wm. Erb, of the Columbia Club, says: "It took me six years to kill my bull moose and you can bet a dollar I will get a first prize even if I have to build another boat. Captain Loveland did his best for us but the wheel had a little too much pitch and we could not turn up our best speed."

On board the Justina, Mr. English had this to say of the race: "We were late in getting to the line and really wanted to stay out of the race, as we had nothing aboard but some ginger ale and a handful of grub. The boat has just been put in commission and had no compass or proper equipment, but when somebody yelled 'cold feet' that made me mad and I ordered the boat over the course. We found Cape May but decided not to go to sea as the fog was so thick. The Budd had to stop at New Castle for gasolene as she was nearly out. Adios tied up to Fourteen Foot Bank Lightship for a while but finished the race."

DELAWARE RIVER ASSN'S CHAMPIONSHIP CRUISING RACE TO OVERFALLS LIGHTSHIP AND RETURN—DISTANCE, 190 NAUTICAL MILES

Class A

Name.	Rating.	Start.	Overfalls.	Finish.	Elapsed Time.	Corrected Time.
Chelwood	39.06	5:30:00	5:20:00	5:45:35	24:15:35	19:33:57
Haji	43.15	7:25:23	6:41:26	6:08:42	22:43:19	19:57:04
Pickaninny	39.51	5:42:07	6:09:50	6:22:46	24:40:39	20:11:08
Casino	49.50	9:45:12	8:24:30	6:34:52	20:49:40	20:23:14
Clare, 3d.....	50.86	10:11:38	8:58:02	6:42:05	20:30:27	20:30:27
Eugenia	40.08	6:00:12	6:43:32	6:52:55	24:52:43	20:41:17
Tillie A.	43.29	7:27:50	7:32:00	6:56:20	23:28:30	20:44:42
Marie W.	41.09	6:51:03	8:15:30	7:29:35	24:38:32	21:17:57
Adios	40.00	6:57:17	7:26:30	8:04:42	26:07:25	21:53:04
Hyacinth	45.25	8:16:15	9:03:00	8:57:30	24:41:15	22:45:52
Isabella, 2d	48.04	9:15:12	11:04:30	11:03:00	25:47:48	24:51:22
Budd	48.88	9:33:27	10:10:15	3:30 a m.	29:56:33	29:18:22
Justina	48.85	9:33:27	Did not turn or finish.			

Class B

Marguerite, 2d..	52.38	10:00:19	7:23:55	5:14:15	19:13:56	19:13:56
Kathemma	46.26	8:01:09	7:14:30	6:15:12	22:14:03	20:14:53
Mary C.	43.74	7:00:00	6:26:48	6:22:45	23:22:45	20:22:26

Winners

Class B—First Prize: The Flat Rock Cup, offered by Commodore George Krusen to Marguerite II. Second Prize: A handsome shield presented by Messrs. Graw and Street to Kathemma.

Class A—First Prize: The Commodore Cup, offered by Commodore Cartledge to Chelwood. Second Prize: The Keystone Yacht Trophy to Haji. Third Prize: A large shield offered by Messrs. Graw and Street to Pickanniny. Fourth Prize: The Vanometer, presented by Barrett & Lawrence Co. to Casino.

Every boat that finished the race received a handsome plaque, with the Association flag and properly engraved.

MESS ROOM TALK

IN this department we will answer questions concerning the problems which boat owners are constantly running up against in the operation of their motors or the handling of their boats. Theoretical as well as practical questions will be answered promptly by mail, and when of sufficient interest, will be printed for the benefit of YACHTING readers. This service is free. Don't hesitate to make use of it. Address, Information Department, YACHTING, 141 W. 36th St., New York City.

For a Wide Range of Speed

Nelson, B. C.

We are up against a peculiar condition out here. To be serviceable (or rather useful) a launch should be able to run twenty miles an hour, most of our trips being from 20 to 60 miles in length. Then we want a launch to troll out of that will run 3 miles an hour. We can not get it straight. It comes to a multiple speed or automobile reverse gear or a reversible propeller. Will you please tell me the efficiency of the best reversible propeller compared with the other kind, and whether they will last or not? The efficiency at the trolling speed does not count so much.

Would also like to know if there is a self starter that would be practical on a motorboat here. We can not use a gas tank, there being no agency here. A gas generator would freeze up in the winter. Think it should run by compressed air or electricity.

V. F.

I believe you will find it rather a difficult matter to run a 20-mile boat steadily at a speed of 3 miles per hour for trolling. In order to obtain a speed of 20 miles an hour a powerful engine must be used. Of course, this motor can be throttled down to a low speed, but even then

the boat will probably travel at 8 or 10 miles an hour. It would be possible for you to cut out one or more of your cylinders and run on the power obtained from the remainder. By doing this and using a reversing propeller—one in which the pitch of the blades can be changed at will—I believe you could slow your boat down to the desired speed.

I would not recommend the use of an automobile transmission system in connection with the propeller, as I believe it would only complicate matters most unnecessarily. While the best reversible or feathering propellers do not give quite as high a speed as will one of the solid type, they are sufficiently efficient for ordinary purposes, and I have found them to give the best service and satisfaction.

There are several satisfactory compressed air and electric self-starters on the market, but for your purposes I would recommend one of the former type. The Janney-Steinmetz Co., of Philadelphia, Pa., make what I understand to be an exceedingly reliable self-starter of the compressed air type.

A Boat to Beat a 6-Mile Current Drawing 7 Inches

Stroudsburg, Pa.

I am a boat-builder and desire to build a boat suited for this particular locality. The conditions as they exist here are as follows:

The Delaware River on which our boating is done is a stream 150 to 250 yards wide, and consists of a succession of quiet spots or deep holes from a mile and a half to two miles long, and connected by a rapid or rift from a hundred yards to a mile long. In the summer time there is only about 8 to 12 inches of water flowing down these rifts, and a very swift, possibly in some spots a 6-mile, current.

The Rift Climber tunnel-stern boat has been tried out here and is not a success. The 3-H.P. Ferro does not seem to furnish power enough. Anyway the boat has not power enough to ascend the rifts with any kind of a load.

I want to build a boat 16 feet or 18 feet long with 4 feet beam, flat bottom, that will run in 7 inches of water and with power enough to go up these 6-mile current rifts. Don't care anything about the speed. I have thought out all kind of schemes from a catamaran with engine bed on a rocker so that propeller could be partly lifted out of water when going up these rifts, to surface propellers and universal joints, and have decided that the tunnel stern is the only thing that will do.

Is there any particular design of propeller that would be suitable for tunnel stern? What would be the best shape of tunnel to provide as near as possible an unobstructed flow of water to propeller?

If I ran tunnel the entire length of boat would the advantage derived compensate for the boat setting lower in the water, which it would naturally do?

Would a 3-5 H.P. engine, turning a 10-inch or 12-inch three blade propeller 1,000 revolutions, be power enough for 16-foot boat 4-foot beam, flat bottom boat?

The boat must stem a 6-mile current in 7 inches of water. That is the question at issue. F. C. C.

In order to make any headway against a 6-mile current, a boat must be capable of attaining a speed in still water of 7 to 8 miles an hour. I imagine that the reason that the Rift Climber boat was not satisfactory in the case in question was due to the fact that the motor with which it was equipped did not drive the craft at a sufficient speed. I do not know of any better shallow draft model than the Rift Climber, and believe that if this boat was provided with a more powerful motor the 6-mile-an-hour current could be successfully negotiated.

If you should build a tunnel boat of the dimensions named, I believe you should construct it on the Rift Climber principle, and that you will then find a 5-H.P. motor will drive it at sufficient speed to answer your purposes. I can see no advantage in extending the tunnel throughout the entire length of the hull, and do not think that any especial design of propeller is necessary. If a 12-inch diameter wheel is not big enough to hold a 5-H.P. engine, more pitch should be given to it.

Mixing Ether with Gasolene

Yonkers, N. Y.

Referring to the mixing of ether with gasolene to obtain increased power, can you tell me what proportion is customary and what results can be expected. F. P. W.

Answering your inquiry, 5 ounces of ether to every 10 gallons of fuel is generally stated to be the safe proportion for ordinary motors. Double this quantity has sometimes been used with safety, but at best it is a dangerous practice, and one to be discouraged. It is not always possible to mix ether thoroughly in the fuel, and this results in explosions of great violence, some of which may be sufficiently strong to damage the motor seriously. Most motorboat races and automobile race meets which are sanctioned by the reliable automobile clubs and associations do not allow the use of any such liquid as ether to be mixed in the fuel tanks. If it is done it is usually done surreptitiously.

Information for a Beginner

New York City.

Is there among the issues of your magazine a number which treats of the very first principle of sailing, for the enlightenment of an absolutely green amateur; giving, say, directions as to the handling of a small boat carrying only mainsail and jib; giving directions as to what ropes are necessary, and also proper names of the different fixtures, etc., that are necessary. If you have already an issue treating of same, will you kindly let me know which one it is that I may obtain it. If not, can you recommend any book or publication which treats of same, in style I have described.

Also would you recommend as safe and practicable the installing of a sail in an 18-foot dory; and have you any suggestions as to additional ballast? W. R.

Answering your inquiry, I would say that YACHTING has published no article quite as elementary as you desire. "Boat Sailing—Fair Weather and Foul," by Capt. A. J. Kenealy, is probably the best book you could secure for your purpose. This book is published by the Outing Publishing Company.

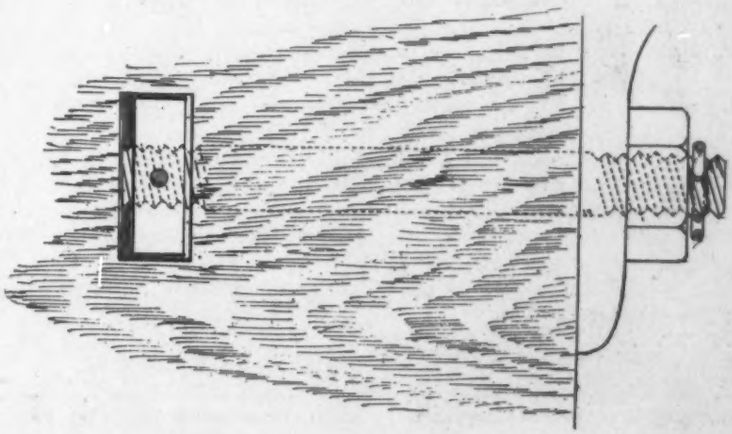
We have had an article on the care and handling of sails, which gives full instructions as to bending sails, and the names of the different parts of the sails. These articles appeared in the May and June issues of 1910, and will be found very comprehensive.

It is perfectly safe and practicable to rig an 18-foot dory with a sail. The sail, however, should not be very large unless the dory were designed for sailing, in which case she would have a rather fuller bearing surface and would be better able to carry sail. On an ordinary 18-foot dory a sail area of 100 feet would be sufficient. The weight of the crew would be ample for ballast except if only one were sailing her, when it might be well to have several sandbags weighing about 50 pounds each as additional ballast. It would be best to rig such a boat with jib and mainsail, the jib being very small.

An Easy and Effective Method of Fastening on a Stuffing Box

THOSE who have had trouble with loose or leaky stuffing boxes will find the method of fastening them in place which is described here very satisfactory. In the stuffing box under consideration a bolt about ½" x 5" was necessary. First procure a ½" x 5" bronze double end bolt, with a square nut on one end. Set the stuffing box on the keel at an angle as this will bring the bolts nearer to the outside.

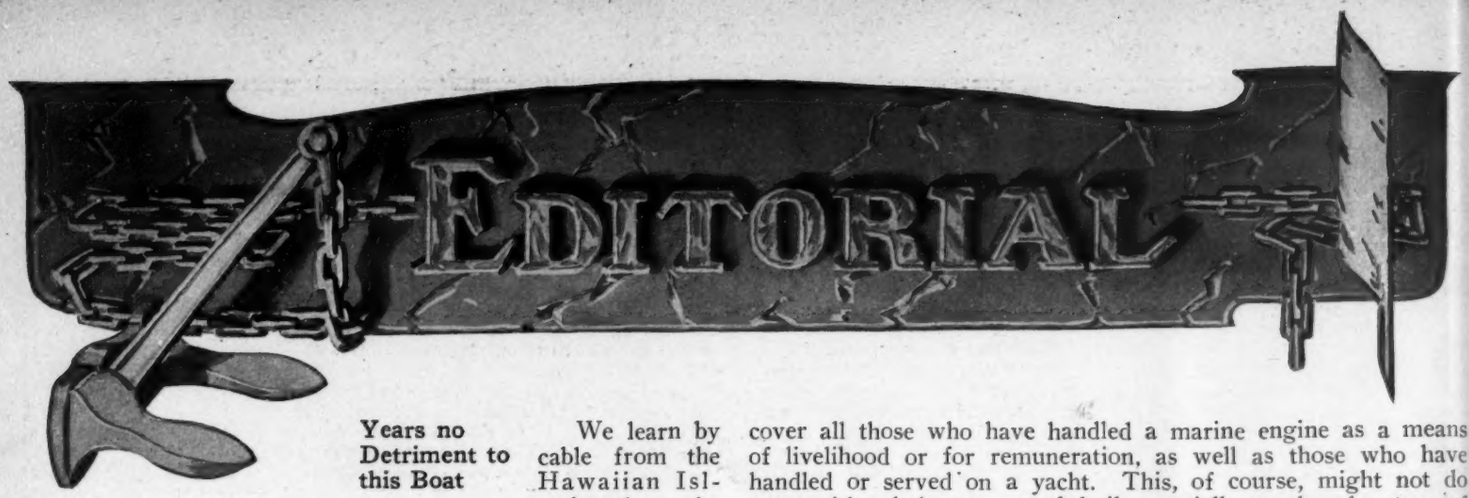
Bore a hole ½" x 5" and at the bottom of the hole mortise in from the outside of the keel a hole the size of the square nut and washer. In this mortise set in the nut and washer, put the bolt through the hole and turn into the nut.



Bore a ⅛" hole through the nut and bolt. Through this hole drive a pin. Have this pin long enough so that it will drive through the nut and bolt and into the keel. This pin will prevent the bolt from turning out of the nut, and hold it when you set up the outside nut.

Next put on the stuffing box and tighten the outside nut. Outside of this nut bore a hole through the bolt and put in a split pin. This will prevent the outside nut from being lost if it should ever work loose.

The hole cut in the keel can be filled with white lead and covered with a small piece of brass. This will fix your stuffing box so you will have no trouble.—F. R. WATERMAN.



Years no Detriment to this Boat

We learn by cable from the Hawaiian Islands that the schooner Lurline has again won the trans-Pacific race from San Pedro to Honolulu. While the story of her race, written by our special correspondent, who was aboard, cannot be received in time to publish in this issue, it is fitting that some expression of appreciation of her wonderful record should be uttered. That a boat built almost thirty years ago (she was turned out in 1883) should enter a 2100-mile ocean race against larger and modern boats,—boats, in fact, that represent the latest efforts of yacht designers in their particular class,—and show the way for the entire distance, is a record to be proud of, and shows that when you get down to rock bottom there has not been much improvement in speed in boats designed for off-shore work. Speed of sailing craft has increased wonderfully where boats are to be used in smooth water, principally by reason of refinement of line and increased sail-carrying capacity, but for off-shore work where rough water, head seas and all kinds of winds are met with, the designers of the '60's and '70's knew what was demanded as well as those of the present day.

Thirty years is a long life for any craft, and particularly for a yacht that has seen as much service as has Lurline. Twice before has she been the winner of this trans-Pacific race, and she has made several long voyages through the South Sea Islands, in addition to which she has been sailed hard on the Coast for many years. The fact that she lost her fore topmast shortly after the start and was sailed without the use of that spar for the balance of the trip, is an additional tribute to her and to the ability of her crew.

Races for Amateurs Only

We have had occasion to refer several times this spring to the ethics of allowing boats owned wholly or in part by manufacturers of boats and engines to race in open events against boats owned and sailed by amateurs solely for the sake of the sport. In this connection it has come to our attention that the members of regatta committees of practically all the yacht clubs that handle big races are frequently appealed to by would-be entrants to know if certain boats (designating by name boats known to be owned by manufacturers or boats built especially to beat the rule) are to enter, stating that they will be glad to enter their boats if they can be assured that they will not be asked to race against the boats in question. It is a perfectly natural stand for the amateur to take—not because he has any prejudice against a boat or engine builder entering the sport, but merely because of the fact that such a man, by his knowledge of the product which he turns out, has an unfair advantage over the Simon-pure amateur. As racing conditions are usually worded, regatta committees are powerless to reject any entry on the grounds above mentioned, provided the boat complies with all published conditions. Certain of our well-known and formerly popular races have been killed by this very abuse, and it is time that yacht clubs recognized this state of affairs and limited entries to boats owned strictly by amateurs and operated for pleasure alone.

It would be a good plan if boats, especially boats under 50 feet long, were required to be manned entirely by amateurs, the definition of what constitutes an amateur being amended to cover all those who have handled a marine engine as a means of livelihood or for remuneration, as well as those who have handled or served on a yacht. This, of course, might not do away with rule beaters—craft built especially to take advantage of some technicality in the rating formula—but as a rule amateurs are not as keen to build such a boat as are those who have an ulterior purpose in winning a race.

On the Atlantic Coast an organization called the Vikings has recently been formed for the purpose of promoting the strictly amateur handling of power boats, and it would be well if all clubs running events in which they hope to get Corinthians to participate would take the same stand.

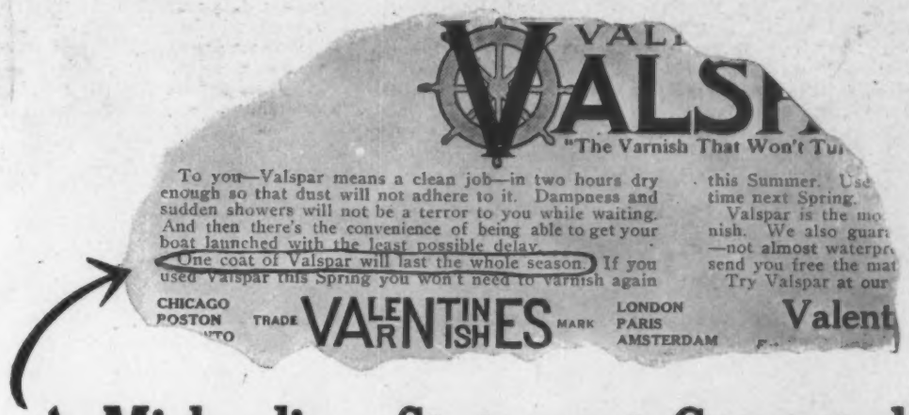
Ethics of the Sport

Speaking of the ethics of the sport of power boat racing in the last paragraph, calls to mind the fact that there is still a good deal of poor sportsmanship shown by owners of power boats in regard to entering races. This is not to say that the sail boat men are very much better, for poor sportsmanship does not seem to be confined to any particular phase of sport and sailing yachtsmen still have much to learn; but too many power boat men fail to enter a race because their chances of winning do not look bright on paper owing to the low rating of some of their competitors. This is an undefendable stand, as races should be entered primarily for the pleasure of competition and not for the sake of the prize. In saying this we do not lose sight of the pleasure there is in winning the prize, or overlook the part that winning plays in any contest, but no race is lost until the finish line is crossed and there is no keener joy than in beating the rule beater. Conditions of water and weather must always be reckoned with, and while the chances may be in favor of that owner or designer who has taken an unfair advantage of the rule, the ethics of the sport demand that one should not refrain from participating for that reason. These remarks are not meant as mere platitudes. Get into the game, play it for the game's sake, and you'll have more fun than you will out of the race in which you don't have to work for everything you get.

The Passing of Displacement Speed Boats

With the popular introduction of the hydroplane to America in the International Race of 1910 it is safe to say that very few men saw the rapidity with which the displacement type of boat would pass away. Practically every high-speed boat, whether built for racing purpose or not, is of the hydroplane or flat type, and it would look as if the pendulum had swung too far in one direction and as if we were overdoing it a little in the matter of applying the "plane" type for purposes where it is not strictly available.

There is no question that boats of this type with decreased displacement can be driven much faster on the same, or even with less power, but what they gain in this respect they lose in all around seaworthiness. A 20-foot hydroplane with high power is only good in the smoothest and most sheltered of waters, and if we persist in using them as we now do there will undoubtedly be some serious accidents that will make us swing back in the other direction. A hydroplane is all right for the uses for which it is intended, and the principle can be employed successfully in many boats, but its merits should not blind us to its faults and wean us from the advantages of displacement.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To you—Valspar means a clean job—in two hours dry enough so that dust will not adhere to it. Dampness and sudden showers will not be a terror to you while waiting. And then there's the convenience of being able to get your boat launched with the least possible delay.
One coat of Valspar will last the whole season. If you used Valspar this Spring you won't need to varnish again this Summer. Use time next Spring.
Valspar is the mo nish. We also guar —not almost waterpr send you free the mat Try Valspar at our
CHICAGO POSTON TRADE VALENTINES MARK LONDON PARIS AMSTERDAM
Valent

A Misleading Statement Corrected

IN last month's advertisement of "VALSPAR" we inadvertently used the above marked phrase. This was an unfortunate oversight.

Good as it *IS*—and most marine men know just *HOW* good—one coat of Valspar is *NOT* adequate protection for a boat and certainly will not carry it through an entire season.

The very nature of the materials used in varnish making necessitates the use of more than a single coat for outside exposure.

The Valspar process of manufacture, by combining these materials in absolutely waterproof form, insures *ALL* the durability possible to obtain, but beyond that point it cannot go.

One treatment—i. e.—*THREE* good, *FLOWING COATS* of this, high-grade, waterproof varnish, applied in the Spring, will make the usual mid-summer varnishing quite unnecessary under ordinary conditions.

Before putting your boat away in the Fall, give it a single coat to protect it through the Winter. That is all that is necessary.

Tuck these facts away in your mind when you go varnish-buying.

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START OF SPEED BOATS AT RED BANK

Driftwood From Alongshore

The Two Hundred Mile Race of the Maryland Motorboat Club

With ten starters and with nine to finish, the 200-mile race held by the Maryland Motor Boat Club, of Baltimore, was such a success that it will now become an annual affair. The winner in Class A was the Marguerite II, owned by A. B. Cartledge, of the Keystone Yacht Club, of Philadelphia. The winner in Class B was the Irma G., owned by L. L. Gardner, of the Maryland Motor Boat Club, while the Class C trophy went to the Usona, owned by H. G. Leland, of the Maryland Motor Boat Club. The only boat to drop out was the Ethel B which had engine trouble.

The racing was on a handicap basis, and each yacht was given its time on the start, the course being from the clubhouse at Ferry Bar to Point No Point, 100 miles down the Chesapeake Bay. The smallest boat in the fleet, the Usona, was sent across the line at two o'clock on the afternoon of June 29th, and the last boat, Marguerite II, got away at 6:40 o'clock. The Marguerite picked up boat after boat until by daybreak the next morning she was in sight of the Irma G., which she overhauled off Sharp's Island.

There was nothing eventful on the run down, the weather being excellent and no wind or sea. About eight o'clock the next morning, however, there was a sharp wind and rain squall which made the going rough for the little fellows as a stiff head sea was kicked up. The Boss was the only boat that suffered and she had to seek harbor, partially on account of her fuel running short. The summaries are:

CLASS A	START, 6/29	FINISH, 6/30
Marguerite II, A. B. Cartledge	6:40 P.M.	9:18 A.M.
Valiant, Lee S. Meyer	6:14 P.M.	11:54 A.M.
Electra, H. A. Sheperd	6:34 P.M.	2:19 P.M.
CLASS B		
Irma G., L. L. Gardner	4:17 P.M.	11:52 A.M.
Amina, A. Stanley Zell	5:48 P.M.	11:57 A.M.
Hap, L. M. Sprague	6:02 P.M.	2:10 P.M.
CLASS C		
Usona. H. G. Leland	2:00 P.M.	1:43 P.M.
Virginia II, R. W. Thompson	2:52 P.M.	1:46 P.M.
The Boss, M. D. Callis	2:08 P.M.	5:46 P.M.

Courier III Wins Vandervoort Cup.

In a 20-mile feature race for the Vandervoort Trophy held by the Buffalo Launch Club, the Courier III, owned by William J. Connors, ran away from the former speed champion of the Niagara River, UU IV, finishing fully 600 yards in the lead. There is some satisfaction for the loser, however, in knowing that in order to beat her, the Courier III broke all records for the Niagara River, covering the 20 miles in 29 minutes and 7 seconds—an average of 41:02 miles an hour, the laps being with and against the current.

The race was an unusually interesting one for the spectators, and was closely contested to the last quarter when the helmsman of the Courier opened up and left the UU IV in the rear; the latter boat also had hard luck in this lap as she cracked a cylinder and broke a valve.

The Courier is another of the fleet of boats of the same name owned by W. J. Connors, all of which have been equipped with Sterling engines. The present boat is powered with an 8-cylinder Sterling engine. UU IV is a Reliance boat purchased this year from J. J. Ryan.

The Block Island Sail and Power Boat Races.

That the sail and power boat races to Block Island did not attract as many entries this year as has been the case previously, is not due to any lack of interest in the event, but to the fact that the races did not receive as much publicity before the start as has been the case heretofore. The course is an unusually popular one, and the races are always one of the leading events of the Long Island Sound season.

Twelve sail boats started in the race this year in a very light easterly wind which late in the afternoon changed to southwest, and increased in strength until after dark when there was another period of calms so that the race was a long one, the first boat to finish being the Interim at 1:04 P.M. Sunday afternoon. She won time and 1st prize. The other boats that finished within the prize money were: Amada, 44 minutes after Interim, 2d prize and handicap prize; Crescent, 3d prize; Rohilla and Dutchess. The little yawl Coot stuck out the long course and finished late Sunday night.

The race for the sailboats started in the morning, while the powerboats were sent away at 5 o'clock in the evening. These boats crossed the line: Thistle, owned by J. H. Wallace, New York Athletic Club; Empire, owned by J. L. Luckenbach; Anna, owned by John Anderson, and Debut, owned by N. A. Nachmann, of Yonkers. The Thistle, a well-known racer, and Empire, a lightly built, double-ended boat, with a big Van Blerck motor, jumped away in the lead and were tearing down the Sound opening an increasing gap between their slower rivals. About half past seven, the Empire sheered off to port, and dropped out of the race with a broken steering gear, leaving the other three boats to go on alone.

Thistle ran away from the other two and finished at Block Island at 3:45 A.M., just as day was breaking. Anna, the second boat, did not finish until 7:03 A.M., while Debut came in last.

Speed Trials of Dixie Jr., No III.

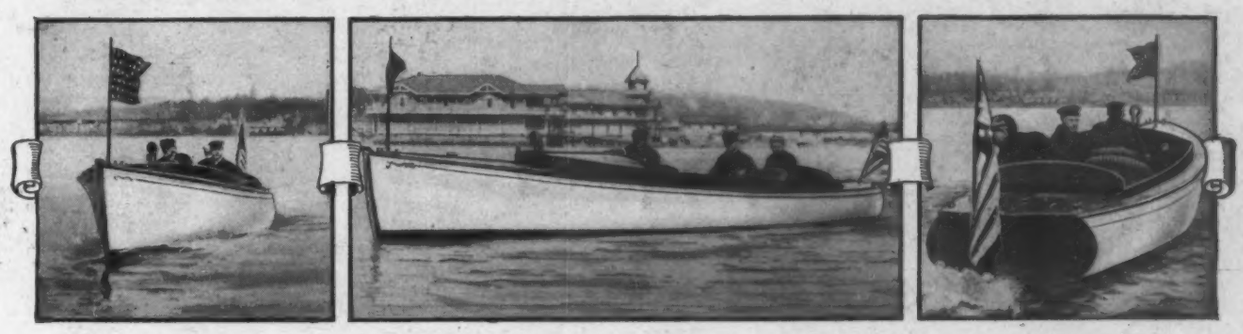
In a wonderful run of June 21st of one of the Dixie Juniors, a boat purchased by Mr. Herbert Capell, and named the Bearcat, she made an average of over 43 miles an hour as a mean of five runs in opposite directions over a mile course. This speed was made the second time the boat was out, and the builders say that the engines were not yet tuned up properly. The following are the figures for the run:

SPEED TRIALS OF "DIXIE JUNIOR" NO. 3

Run.	Time. M.S.	Miles per hour.
1. North	1:22½	43.78
2. South	1:24⅖	42.55
3. North	1:24⅖	42.55
4. South	1:23	43.37
5. North	1:23⅕	43.16
	5	215.41
Average		43.08 miles per hour.

Speedway Runabout

ARRIVING LINGERING *and* DEPARTING



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There's a place in your locker for 3 in One. Always have 3 in One in its place!

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FREE Write today for a generous sample and the 3-in-One Dictionary, both **free.**

Sold everywhere in 3-size bottles: Trial size (1 oz.) 10c, 3 oz., 25c, and 50c economical Yachtsmen's ½ pint size. Also in new Hardy Oil Cans (3½ oz., 25c.)

Oils *everything* aboard

Cleans and polishes *anything*

Prevents rust and verdigris *everywhere*

-3 IN ONE OIL CO., 27 Broadway, New York City

SHIPMATE RANGES

8 SIZES 11 STYLES

Mr. Winfield M. Thompson, yachting editor of the Boston Globe, in a recent letter to us says:

"The other day I met a life-time user of kerosene stoves who always laughed at me and my Shipmate; he is now installing a Shipmate in his new boat, a cat!"

THE STAMFORD FOUNDRY COMPANY
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Consult YACHTING'S Information Department on any of your problems. Its service is absolutely free.

START OF THE COLONIAL YACHT CLUB'S LONG DISTANCE RACE TO CORNFIELD LIGHT.

The Colonial Yacht Club's Cornfield Race.

Although J. B. Luckenbach's little Empire finished first at 12.10:50 P.M., July 7th, having completed the long course at better than 10 miles an hour, the Alfred S., owned by H. S. Soldner, of the Orum Yacht Club, was the winner of the 210-mile motorboat race to Cornfield Light and return, started Saturday, July 6th, under the auspices of the Colonial Yacht Club. The Alfred S. crossed the finish line in front of the Colonial Club at 7:29:13 July 7, making her elapsed time for the long race 27:59:12, but she enjoyed the second largest handicap of the fifteen craft which started at 3:30 o'clock Saturday afternoon, and her corrected time was 15:01:43. This time gave the Alfred S. first honors by more than two hours. The Francis H., owned by G. W. Hoertel, the long marker in the handicaps and the last of the boats to finish, won second place by one and one-half minutes from the Spindrift, owned by C. R. Butler, of Albany.

The race was the most successful of its kind ever held by the Colonial Yacht Club. The course extended from a point in the Hudson River in front of the Colonial Yacht Clubhouse, at 140th Street, down the Hudson to the southerly end of Manhattan Island, thence up the East River, past Throggs Neck, Stepping Stone and Execution Lights, to and around the Cornfield Light Vessel, and back over the same course to the starting line

Seven prizes to be awarded in the order of corrected time, were donated by Senator Cyprian C. Hunt for this race.

The summary:

Boat, Owner, and Club.	Cornfield Light Turn. H.M.	Finish. H.M.S.	Corrected Time. H.M.S.
Alfred S., H. S. Soldner, Orum	5:41	7:29:12	15:01:43
Francis H., G. W. Hoertel, Hudson River	6:04	9:45:13	17:07:41
Spindrift, C. R. Butler, Albany	2:50	3:59:58	17:09:10
Lida M., C. P Holland, Colonial	4:17	5:17:30	17:31:01
Empire, J. B. Luckenbach, Atlantic	1:58	12:10:50	18:51:35
Widgeon II., W. L. Martin, Albany	3:33	3:15:43	19:02:35
Snap Shot III., J. B. Linderman, Colonial	2:38	2:14:30	19:02:44
Naiad, E. E. Parrey, Hudson River	2.38	3:59:58	21:06:17
Madeline II., O. Reilly, Hudson River	9:43	9:41:50	28:21:42
Anna, J. Anderson, Clason Point	4:34	*	
Helen G., W. Geng, Colonial	7:55	*	
Clara W., Langbein, Canarsie	Did not turn.		
Ruth II., G. J. Vestner, Colonial	Disabled.		
Idle Time, M. B. Behrman, Colonial	Disabled.		
Lady Betty, H. J. Russell, Colonial	Disabled.		

*Did not finish within time limit.

DETROIT, WHICH IS NOW ON HER WAY ACROSS THE ATLANTIC.

Pistakee Yacht Club.

The fast motorboat Sentinel staring from scratch in a field of 12 boats won the 4th of July trophy cup of the Pistakee Yacht Club races making the 7 miles in 18 minutes and 20 seconds. The Sentinel is a 25-foot racing boat built last year. The race created great interest among all of the members of the club, and was watched from the clubhouse as well as from the numerous cottages that line the shore of Pistakee Lake and Bay.

The first four boats finished in the following order:

Sentinel, owned by O. C. & E. M. Miller, 18 minutes 20 seconds. Islander, owned by O. C. & E. M. Miller; Three Boys, owned by Sam Blodgett, of Chicago; Eda, owned by Mrs. Paul Gertin.

The judges were: Andrew McAnsh, Frank B. Edelmann, Frank X Smith, Chas. E. Carson and Sam Blodgett.

Corinthian Yacht Club's Race to Cape Cod

Nutmeg, the scratch boat, owned by A. C. Jones, of Boston, won, in Class B, the Corinthian Yacht Club's ocean race from Marblehead to Cape Cod and return which started June 22d. In Class A, boats above 30 feet waterline length, Wianno and Sayonara were the only starters, the former winning by 14 minutes and 15 seconds. The course was from Marblehead to the whistling buoy off Eastern Point, thence to the Wood End, Cape Cod and return to Marblehead.

CLASS A, OVER 30 FEET. Name and Owner.	Elapsed time.
Wianno, A. W. Stevens	17:52:05
Sayonara, V. F. West	18:00:20

CLASS B, UNDER 30 FEET.	Corrected time.
Nutmeg, A. C. Jones	16:47:25
Marie L., Alley & Sibley	17:10:45
Tunipoo II., C. A. Cooley	17:15:33
Tyro, John Curtis	17:45:19
Al Kyris, A. M. Moody	18:23:03
Tabasco III., G. N. & J. S. Proctor	19:04:36
Porcupine, John Tyler	19:19:40
Wanderer IV., F. E. Dawes	20:56:56
Norma II., H. A. MacInnis	21:34:33
Fly, C. W. Barron	Not taken
Fancy, C. W. Barron	Not taken
Eleanor, W. L. Jefferson	Disabled

To Cross the Atlantic

The power lifeboat Detroit sailed from New Rochelle, Sunday, July 14th, in an attempt to cross the Atlantic Ocean under power. The dimensions are: length overall 33 feet; beam 9 feet; draft 5 feet. She is powered with a 16-H.P. Scripps motor located in the stern, the middle part of the vessel being taken up with tanks. These five tanks below deck and two on deck, all of the Janney, Steinmetz seamless make, give a total capacity of 1,250 gallons. The boat was built for Commodore W. E. Scripps, of Detroit, and on this trip is in charge of Thomas Fleming Day.

Fire Prevention On Motor Boats

Beware of cheap and inferior imitations of the Pyrene Fire Extinguisher

Every day brings its record of fires in motor boats. Floating oils and gasoline underneath the bilge boards on power boats are fertile fields for fires.

When you are miles from shore and flames break out in your motor boat, you are at the mercy of elemental dangers. There is one reasonable and effective way to fight fire on power boats, and that is to use the PYRENE Fire Extinguishers.

The contents of PYRENE Fire Extinguishers are a combination of powerful gases in liquid form. This when subjected to a temperature of 200 degrees F. or over, is instantly transformed to a heavy, dry, cohering, non-poisonous gas blanket, which simply separates the flame from the burning substance *by lifting off the flame.* It kills incipient fires instantly and being a non-conductor, may be used safely on electrical fires.

Included in the lists of Approved Fire Appliances, issued by the National Board of Fire Underwriters.

A PYRENE extinguisher weighs only 5 lbs. filled. It is 14 in. long and 3 in. in diameter. Price $7 in solid brass; $8 full nickel-plated.

Approved by U. S. Steamboat Inspection Service

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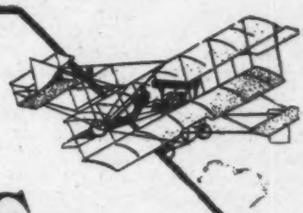

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A Protection Against Cold Air and an Absolute Safeguard Against Drowning.

This Garment Will Float a Fully Dressed Man Indefinitely in Salt or Fresh Water.

Corsets for Women are Shaped to the Figure. An Absolute Safeguard Against Sinking. To Be Worn Under Bathing Costume.

All Neversink Garments afford absolute protection against drowning, not depending in any way upon cork or inflation, but upon a special fibrous material as soft and pliable as down and having four times the buoyancy of cork, which makes the garment far superior to the cumbersome cork life-belt. They are made of dark fawn colored khaki.

The Neversink, Norfolk Jacket, Khaki . $15.00
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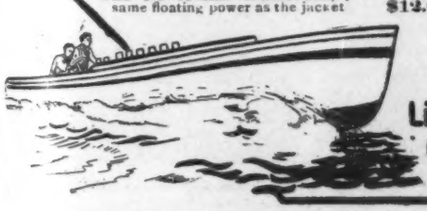
The Neversink Floating Corset
Girls' Size, $8.00 Women's Sizes $10.00
The Neversink Waistcoat, possessing the same floating power as the jacket **$12.00**



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THE BOAT

THE PROPELLER

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By Oregon Wolf at Portland, February 25th, over Government surveyed course, officially timed. This boat was designed and steered by Mr. John E. Wolff, the Pacific Coast speed Wizard who has won the Pacific Coast championship for years.

Record Oregon Wolf 30 statute miles 42.78 miles per hour.
Best corresponding record DIXIE IV 40.40 miles per hour.

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OF INTEREST TO THE SKIPPER

Eagle Engines Now Made at Torrington

The Eagle marine engine business of The Eagle Co., at 98 Warren street, Newark, N. J., was transferred on July 1st to The Standard Co., at Torrington, Conn., where in the future all correspondence, replacements and construction will be done.

The transfer of the Eagle Engine business to its original place of beginning has been occasioned through the purchase of a large manufacturing business which was found better adapted to the Newark plant than to any other of the various manufacturing departments of the Standard Co. For this reason it was found necessary to arrange for the engine business, and Torrington was decided upon as the best place for the manufacture of engines. This change does not make any difference in the management, as it will be carried on under the same general management as in the past. The transfer will, however, bring a larger engineering department in connection with this particular line and steps have already been taken to increase this part of the business, and designs are being considered for the 1913 lines which have progressed to such an extent that the Standard Co. believes that it will be a line that will appeal to distributers and agents throughout the country. There will be no interruption whatever in the business, as the transfer has been practically completed and shipments of parts are going forward from the Torrington office.

The Race Between Baby Reliance II and Kitty Hawk

The unfortunate accident which sent the Baby Reliance II to the bottom of the Detroit River on June 8, during the first lap of the race with Lee Counselman's Kitty Hawk, prevented John J. Ryan's speedy little 20-foot hydroplane from showing the public what she could do. Mr. Ryan claims he has a boat that can do considerably better than 60 miles an hour. In her preliminary trials at Algonac, Mich., soon after the eight cylinder 150-hp. Sterling engine was installed, the diminutive racer was driven over the measured course at a speed never before attained by any boat. Those who timed her claim she is easily the fastest thing on the water the world has ever seen.

The accident at Detroit was caused by a cruiser running out on the course. The Reliance attempted to avoid the swells, but a small launch darted in front of her. Rather than collide with the launch, she was headed into the wash astern of the cruiser, swamped and went down. She was immediately raised and taken to Algonac. The boat was little damaged. Efforts are now being made to bring the two boats together again on the Niagara River. The photograph of the race which we reproduce here was taken one-half minute before the accident and shows the Baby Reliance II well in the lead of Kitty Hawk.

It looks very much as though the Sterling Engine Company would power many of the fastest boats this year. At least one Sterling power plant and possibly more, will drive boats in the big International race. Count Casimir S. Mankowski of New York City has already entered his new 32-foot hydroplane powered with two 8-cylinder 150-hp. Sterlings in this contest. In addition to this Sterlings will power all of the Dixie Juniors and the Baby Reliance hydroplanes.

W. W. Trimpi of Newark, N. J., owner of last year's cup winning Ace II, will soon launch his new 26-foot hydroplane powered with a Sterling 150-hp. racing machine; E. L. King, of Winona, Minn., has a similar engine installed in a fast runabout; J. J. Murphy, of Troy, N. Y., will soon receive his fast 40-foot runabout from the Niagara Motor Boat Co. This outfit will be driven by a Sterling 150-hp. engine. At least three other fast boats driven by these same machines will take the water within the next few weeks. In addition to these, the 42-foot cruiser Sterling, powered with a six-cylinder 45-65-hp. engine has been entered in the Olympic races to be run in Sweden the latter part of July.

The New Winchester Exceeds Speed Requirements

Messrs. Cox & Stevens, the designers of the new express steam yacht Winchester for Mr. Peter W. Rouss, which has attracted so much attention during the course of its construction, have received a very satisfactory cable from the builders of this vessel, Messrs. Yarrow & Company, Scotland to the effect that a thoroughly satisfactory trial was run over a measured mile June 25, during which the Winchester made an average speed of 32.23 knots as a mean of six consecutive runs over a measured mile. This speed was secured without undue forcing and exceeds the speed guarantee by .23 knots, and it is safe to say that if desired the owner can drive Winchester at a considerably higher speed.

Both the owners and the designers are much pleased at the showing made, and Winchester will be in a class by herself, being the fastest vessel of her type afloat, and possessing excellent cruising accommodations and good sea-going qualities.

The Winchester is 205 feet over all, her beam is 18 feet, six inches, and she is driven by Parsons Turbine supplied with steam by oil fired Yarrow water tube boilers.

The trials having been completed, the Winchester will be immediately prepared for her trip across the Atlantic and will soon be seen in these waters in commission.

A New, Inexpensive Means of Reversing a Two-cycle Engine

However true the expression "there is nothing new under the sun" may be, a Washingtonian has perfected, patented, and is now putting on the market a motor boat engine attachment that is a new one on us. In fact, although this device is new we feel that, inasmuch as it performs its function of reversing a motor boat engine so nicely and fulfills a long felt want, in the way of an inexpensive, reliable and absolutely dependable means of reversing a motor boat so adequately, our readers would like to know about it.

While most every motor boat enthusiast knows that when taking extreme care and exercising the utmost diligence in watching the engine, he can reverse it on the spark; yet many have found to their sorrow that owing to miscalculation attempts of this nature have caused disaster.

This reversing switch, which is manufactured and sold by J. B. Moore of Washington, D. C., performs its function of reversing an engine on the spark, but, unlike reversing on the spark by hand, the switch is absolutely accurate and reliable in its action.

For its accuracy it depends upon an unalterable law of nature—that of centrifugal force—and the great number of switches that are now working successfully shows that as the action of centrifugal force is unvarying so is the switch positive in performing its function of reversing a two-cycle engine. Operating this switch is so simple that a child can do it—it is simply necessary to pull the chain with the spark advanced and the switch does the rest automatically.

Another advantage of this switch that will appeal strongly to motor boat men will be found in the manner in which an engine can be either slowed down or stopped with it. If it is desired to slow the engine down, pulling the chain repeatedly with the spark retarded will do it. By doing this, the speed of the boat can be reduced as much as desired without touching the carburetor and without any danger of stopping the engine.

Should it be desired to stop the engine one need only pull the chain and hold the switch open. If this is done, when the engine is cranked for starting again, the switch automatically closes so that there is no trouble caused by the switch when it is again desired to start up the engine.

The switch in itself consists of two separate parts, the combined weight of which is less than one pound. One part, the tripping roller, is attached to the rim of the fly-wheel on the side next to the engine cylinder. The other part, the switch proper, is attached to the engine bed.

The switch is then adjusted so that when the

(*Continued on page* 124)

Picture taken from the Belle Isle bridge showing Baby Reliance and Kitty Hawk one-half minute before the former sank. Baby Reliance was well in the lead at this time.

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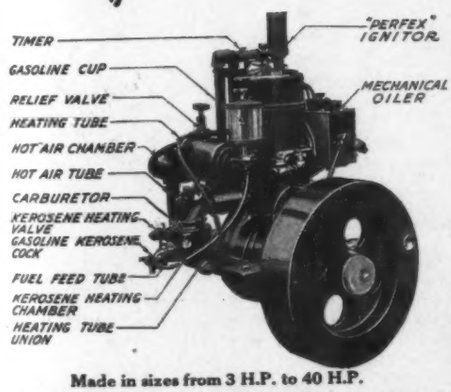
The KNOX MOTOR



The Motor that propelled the Sea Bird across the Atlantic Ocean, thereby proving it is the most reliable and durable Motor on the market today.

The up-keep cost of the KNOX is very low. It really means they are the cheapest Motor to buy and also the highest grade.

Made in sizes from 3 H.P. to 40 H.P.

The quality is there. All the iron castings and bronze castings used on the Knox are made in Knox foundries. All the machine work on Knox motors is done by native workmen, who work by the hour and who are proud of the results. These are some of the Reasons why the KNOX MOTORS are more durable and reliable than others. Full details on request.

Camden Anchor-Rockland Machine Co.

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Durkee's Combination Taffrail Log and Speed Counter

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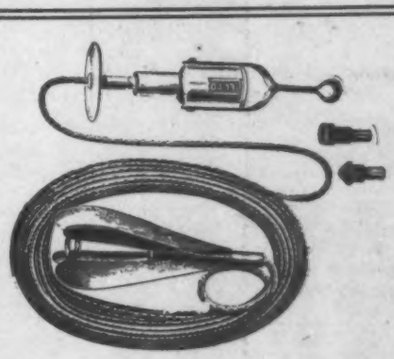

No Setting Required

This Log is the most compact and accurate small Log on the market, and can also be used to obtain the speed of engine by simply detaching the line thus combining two very useful and necessary instruments for Motor Boats.

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Send 20 cents in stamps for postage on mammoth catalogue

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CHARTREUSE

(Liqueur Pères Chartreux)

both being identically the same article, under a combination label representing the old and the new labels, and in the old style of bottle bearing the Monks' familiar insignia, as shown in this advertisement.

According to the decision of the U. S. Supreme Court, handed down by Mr. Justice Hughes on May 29th, 1911, no one but the Carthusian Monks (Pères Chartreux) is entitled to use the word CHARTREUSE as the name or designation of a Liqueur, so their victory in the suit against the Cusenier Company, representing M. Henri Lecouturier, the Liquidator appointed by the French Courts, and his successors, the Compagnie Fermiere de la Grande Chartreuse, is complete.

The Carthusian Monks (Pères Chartreux), and they alone, have the formula or recipe of the secret process employed in the manufacture of the genuine Chartreuse, and have never parted with it. There is no genuine Chartreuse save that made by them at Tarragona, Spain.

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Sole Agents for United States.

engine is running the roller will just miss the sliding contact of the switch, yet so close that when the counteracting spring pulls the roller toward the center of the fly-wheel, the roller will hit and close the ignition circuit.

Adjusting the switch so as to work properly is a simple matter requiring merely a small amount of ingenuity and the usual knowledge of gas engines that the average boat owner possesses.

The ground or engine ignition wire instead of being attached to the engine bed is attached to the switch so that when the chain, which is fastened securely to any convenient part of the engine, is pulled it will force the sliding contact or beveled tongue of the switch toward the fly-wheel and break the ignition circuit which, of course, causes the engine to slow down.

The tripping roller, while the fly-wheel is rapidly revolving is, through the action of centrifugal force, held out toward the rim of the fly-wheel, but, as the speed diminishes, the counteracting spring naturally pulls the roller in toward the crank-shaft. When the engine slows down to just the proper speed the roller will throw the switch and the advanced explosion will effect a reverse.

While this device is new—it having only been patented in May of this year—Mr. Moore has a great number of them installed on boats on the Chesapeake from Baltimore to Norfolk and a number up and down the Potomac, all of which are working successfully. While the device weighs less than a pound, it is *big* enough to control engines of mammoth size.

The manufacturer puts this switch out with a rigid, money-back-if-not-satisfied guarantee, but from what we learn of its success, it is predicted that Mr. Moore will very seldom have to take one back.

How to Run a Successful Club Race

(*Continued from page* 85)

ducted from his original handicap; the second boat in each race lost two minutes from its handicap, and the third boat finishing had one minute deducted. No penalty was placed on boats finishing worse than third, and they started the next race with the same handicap as in the previous race.

"In starting the second and third races, instead of starting all boats at the same time, each boat was started on its handicap, and by so doing some very close finishes were had. By making the second and third races practically pursuit races, it not only makes excitement on the boats themselves, as they try to catch the boat ahead, but also holds the interest of those on the club float. So successful was this handicapping that the corrected times in the different races were only a few seconds apart. In closing I might add that the Hudson River Motor Boat Club gladly extends an invitation to anyone interested to be present at the running of any of these races and the committee will explain any points not thoroughly understood."

Name.	Elap. Time.	Cor. Time.	Points.	Handicap.
Nellie	54.13	32.13	4	22
Maseba	54.03	32.	3	22
Gray Hare	43.17	31.17	2	12
Roxana	41.06	31.06	1	10
Florence	1.11	33.	5	38
Whippet	35.03	35.03	7	Scratch
SECOND RACE.				
Florence	1.15.22	37.22	6	38
Anadora	53.22	31.22	1	22
Nella	57.17	35.17	3	22
Maseba	56.20	34.20	4	21
Gray Hare	47.03	37.08	5	10
Whippet	32.20	32.20	2	Scratch
(ONE LAP OR ½ DISTANCE OF OTHER RACES)				
Florence	34.05	14.05	1	20
Maseba	27.12	15.42	5	11.30
Nellie	27.15	15.45	6	11.30
Anadora	26.09	15.39	4	10.30
Gray Hare	20.10	14.10	2	6
Whippet	28.	28.	7	Scratch

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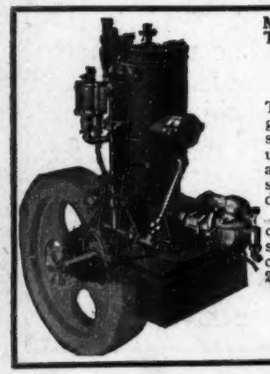

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Don't you think the choice of these men should help you to decide? Built in sizes from 2½ H.P. to 15 H.P.

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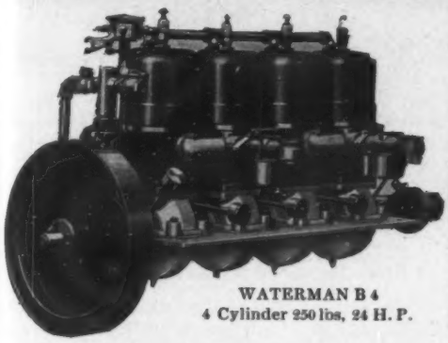
GRAND RAPIDS, MICH., U. S. A.



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4 Cylinder 250 lbs, 24 H. P.

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are made with Aluminum Crank Cases, Copper waterjackets and all other high grade features. Don't fail to investigate.

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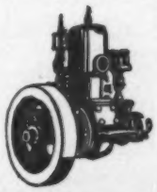

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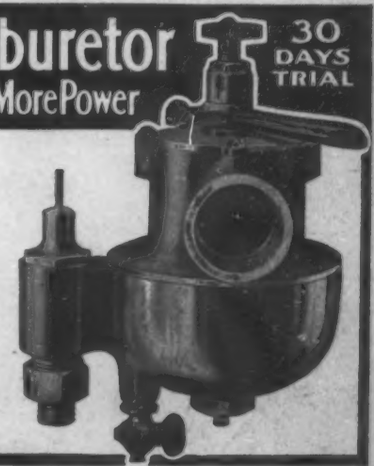

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He has secured all that any motor owner could ask of any make of engine—efficiency, reliability, and economy.
The Vim will do the same for you as it has done for its many owners.
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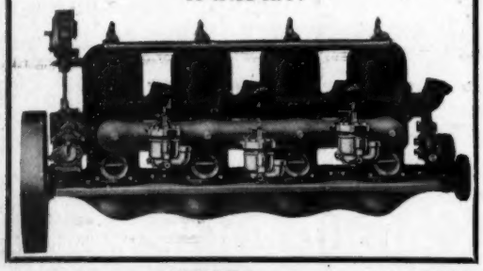

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Closets from $25 to $50
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Racing Calendar for August, 1912

August 1-2-3.—A. P. B. A. Gold Challenge Cup races at Frontenac.
1-2-3.—Boston Y. C. Midsummer series at Hull.
3.—Horseshoe Harbor Y. C. Annual regatta.
Marine and Field Club Championship.
Seawanhaka-Corinthian Y. C.
Mahopac Boat Club. Sealed Order Race.
Riverton (N. J.) Y. C. Power boat races.
Wollaston Y. C. Interclub open.
4.—Lakewood (Ohio) Y. C. Power boat races.
Lynn Y. C. Squadron run to Marblehead.
Cleveland Power Boat Club.
5.—Amber Y. C.
Eastern Y. C. Special open race to Marblehead.
6.—Boston Y. C. M. Y. R. A. Open race at Marblehead.
Lake Champlain (Burlington, Vt.) Y. C. Annual Regatta.
7-8-9.—Corinthian Y. C. Midsummer series at Marblehead.
7-14.—Scripps Reliability Cruise. Start from Detroit.
8-9-10.—Great Lakes P. B. League. Regatta at Hamilton, Ont.
10.—Huguenot Y. C. Annual regatta.
Bridgeport Y. C. Annual regatta.
Corinthian Y. C. Annual open races at Marblehead.
Mahopac Y. C. Commodore's Cup races.
Delaware River Assn. Power boat races.
National Y. C. Championship.
Seawanhaka-Corinthian Y. C.
M. B. C. of Buffalo. Free-for-all Handicap.
10-11.—Sacramento (Cal.) Y. C.
10-17.—Western P. B. Assn. Power boat Regatta, Chicago.
11.—San Francisco Y. C. Power boat
Lakewood (Ohio) Y. C. Power boat races.
14.—Riverside Y. C. Special race.
Camden (N. J.) M. B. C. Power boat races.
16.—Camden (N. J.) M. B. C. Race from Camden to New York.
17.—Stamford Y. C. Annual regatta.
Atlantic Y. C. Open regatta.
Seawanhaka-Corinthian Y. C.
Mahopac Y. C. Carnival of water sports.
Cottage Park Y. C. M. Y. R. A. and Interclub open races.
Harlem Y. C. Stratford Shoal race.
18.—Hudson River M. B. C. Triangular course off clubhouse.
19.—B. I. Trophy trials.
20-23.—Atlantic Y. C. Race week.
21.—Keystone Y. C. (Phila.) Cruiser Race, Wilmington, Del., to Ship John and return.
22-24.—Pacific International P. B. A. Pacific Coast Championship races at Astoria, Ore.
24.—Bensonhurst Y. C. Championship
Seawanhaka-Corinthian Y. C.
New Rochelle Y. C. Summer race.
Northport Y. C. Annual regatta.
Detroit M. B. C. Speed boat races.
Wilmington Y. C. Power boat races.

(*Continued on page* 128)

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Yachtsman's Knives

Our New Buffalo Handle Yachtsman is a beauty, besides being very serviceable. All **Thomaston** knives are made of the best of material. Where can you do better at the prices for **best quality**?

Camp Spoon and **Fork Knife**, . . . $1.25
Yachtsman's Knife, with marlin spike,
Buffalo handle $1.85
Nickeled handle $1.25
Prest-O-Lite wrench, knife, screw-driver, bottle opener; stag handle 85
New Serpentine Knife, three blades, stag handle . . . . . $ .65

All brass-lined, German silver bolster, and best of blade steel in all our goods. All goods guaranteed or money refunded. Address:

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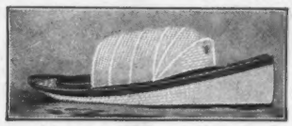

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have no superior for
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Made of brass with polished ash handle to fit in flag pole sockets. 1 inch, 1¼ inch or 1½ inch for canoes, launches and small motor boats.

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With split cam and hinged boxes can be attached to propeller shaft without uncoupling the shaft. Stroke 1½ inches, bore 1½ inches. This is the most compact air pump made. It is entirely out of the way, and the throw of a small lever puts it into action, or stops it, while the engine is running.

No appreciable extra power is required to operate

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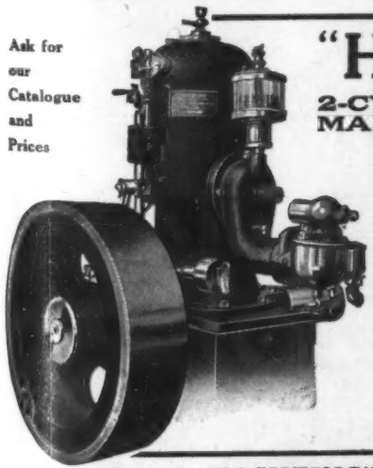

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SMOOTH—DURABLE—SLIPPERY—HANDSOME
THE MOST POWERFUL PREVENTIVE OF MARINE GROWTH PRODUCED
For WOOD or STEEL. It is NOT a Copper Paint and IS Non-Corrosive.
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BONNEY DORIES, $59
16 feet x 5 feet beam, complete rig.
18 feet x 5 feet beam, $65 and $70.
19 feet x 5 feet 6 inches, $90, decked, $115.
21 feet x 5 feet 8 inches beam, decked, $140.
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Propelled the winners in all speed boat contests (all classes) in which present world's records were established. Send for catalog today.
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M. B. Club of Buffalo. 28-foot handicap.
Boston Y. C. at Marblehead.
Lynn Y. C. M. Y. R. A. Open races.
24-25.—Trenton (N. J.) Y. C. To Fort Delaware and return. 160 miles.
25.—Cleveland P. B. C.
26-28.—Motor Boat Club of America. Elimination trials for Harmsworth Cup Race, Huntington, L. I.
30.—Seawanhaka-Corinthian Y. C. Special race.
31.—Seawanhaka-Corinthian. Annual regatta.
Marine and Field Club Championship.
Delaware Y. R. A. at Riverton. Speed boats.
Hudson River Y. R. A. Annual regatta at New York M. B. C.
Wollaston Y. C. M. Y. R. A. Open races.
31 to Sept. 2.—British International Trophy Races at Huntington, L. I.

The Yachtsmen's Club Ocean Race

(*Continued from page* 102)

Quarters before Chelwood but we beat Caliph there.

We decided to hold half a point more easterly than the course, N. N. E. ⅜ E. This was done for half an hour and probably it caused our undoing at North East End Light Vessel. "Doc" took the wheel at 3:30 A.M. and called the Fog King to his assistance. That old king accommodated him and let loose with more fog than we had bargained for. It was as thick as cheese with no holes in it.

Just as soon as the fog set in, "Doc" pressed the button of the electric horn but it did not respond. "Ruf" was called to fix it and gave another long push and the horn let out a yell that brought the boys on deck in a jiffy. At the same time a steamer gave a long blast so close to us that it raised our hair, and a minute later we got her swell. From that time on we kept the horn going, you can bet.

We expected to pick up Five Fathom Bank Light Vessel at 6 A.M., but did not see it. Probably it would have been better had we then and there dropped the lead and found what depth of water we had instead of trusting that the fog would lift by the time we reached North East End Light Vessel. At 6:40 A.M. we ran close to a fisherman and asked him the distance to North East End. He told us it was about 7½ miles and that our course was all right. This would make us overrun the distance by our calculations, so we split the difference and let her rip up the coast.

At 7:20 A.M. we slowed down and listened for the fog signal but heard nothing. Sailed another 2 miles then stopped engine and took soundings. Found 17 fathoms, so we knew we had sailed too far to the eastward. Decided to take a line of soundings, or rather a circle of soundings. 7:50 A.M. course N.W. sounded again and found 17 fathoms with coarse gray sand. Sailed again on a W. course for ten minutes then dropped the lead and found yellow sand in 10 fathoms. Plotted this course from the soundings on the chart and found that North East End Light Vessel must be S. W. by W. Sailed this course for ten minutes and sure enough there she was dead ahead. Answer. Take a deep sea lead when you go off shore and know how to use it.

Reported to North East End Light Vessel and found we were the fifth boat to pass. Marguerite II still held her lead, Caliph was second, Dream third, Luegeo II fourth, and Chelwood fifth.

They told us that Mirna had not reported, which would give Chelwood second place, but

(*Continued on page* 130)

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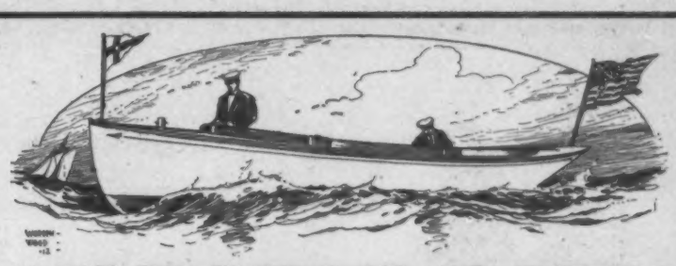

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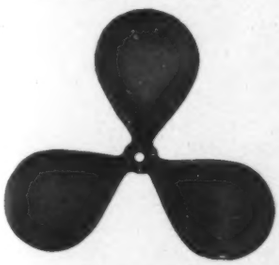

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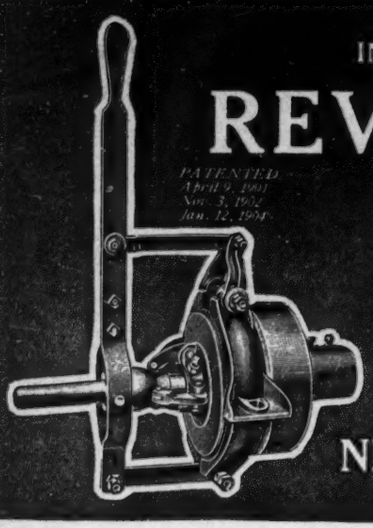

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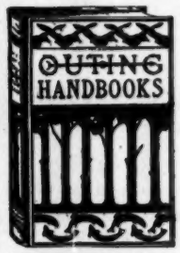

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we did not cheer up on that account as Mirna with Joe Snellenburg aboard was too dangerous a proposition to treat lightly. As we sailed for Atlantic City the fog lifted and we spied Luegeo II some 2 miles ahead of us.

Chelwood finished at 11:37:30 A.M. Saturday, having taken a little less than twenty-four hours to go 178 nautical miles—the worst showing she ever made in any race. We found that Mirna had finished at 9:58 and Dream at 10:22 A.M., Dream winning on corrected time by one hour and 5 minutes and 43 seconds over Mirna, while Chelwood was in third place.

Among the Class A boats, Marguerite, the scratch boat, finished at 7:23 A.M., with Maraida an hour and 19 minutes after her at 8:42 and Caliph only 23 minutes away, Caliph saving her time and winning easily by one hour and 7 minutes on corrected time.

The owner of Marguerite, Com. A. B. Cartledge, said of the race: "We will try to get half a knot more out of our boat, then we can just about give all that time allowance to the others. It was my first night at sea and we nearly missed North East End Light Vessel, but fortunately the fog lifted and we reported all right. Com. E. C. Headley and Harold Rehner worked with a will to make us win. Alfred Cartledge hustled the engines as they had never been hustled before, but we could not give Caliph 2 hours and 48 minutes."

After the race the owner of Dream, the winner in Class B, said: "My boat did just exactly what I expected of her. We passed Chelwood after about an hour's sail and did not have all the power on at that. Picked up a schooner for North East End Light Vessel, but soon found our mistake and lost very little time. We are all ready now for the Bermuda race."

From New York to Shelter Island by the South Shore

(*Continued from page* 92)

brings you to the entrance to Shinnecock Bay. Head directly for Phillip's Point, and when off the point steer E.½N. for Rampasture Point past Tiana Bay. From Rampasture Point steer directly for Ponquogue Point where the Shinnecock lighthouse rears its red tower 160 feet high. Keep off shore about ¼ mile when rounding the point until you are off Cormorant Point. Then head N.W. by N. for the entrance of the Shinnecock Canal, connecting Great Peconic Bay with Shinnecock Bay. Half way through the canal you will come to a little settlement known as Canoe Place, which is just south of the railroad bridge.

After passing through the rest of the canal, head N.E. for the black and white channel buoy which is 3½ miles from the canal. Pass the buoy close aboard and head for the red buoy off the point of Robbins Island. The scenery through here is of exceptional beauty, reminding one very much of an inland mountain lake. From the red buoy you will pick up a black buoy and then another red buoy, number S 14. Keep to the south of this latter buoy and steer N. E. across Hogneck Bay to a red buoy, S 12. From here you can pick up the black buoy with an occulting white light off Jessup's Neck.

Holding the same course you will soon reach red buoy S 10. Round this and head for the red buoy with occulting red light off Paradise Point. This will bring you into Southold Bay with Shelter Island to starboard. Round Jenning's Point, where there is a large windmill, and pass between it and the tall chimney on Conkling's Point. You can now pick up red buoy S 8. There is a tower on Shelter Island about half way between the buoy and Conkling's Point. A course N.N.E. will lead you to the village of Greenport where there is excellent anchorage in Sterling Creek, or in Deering Harbor opposite, and an opportunity for an extended and pleasant stay. You will find plenty of water in Deering Harbor off the Shelter Island Yacht Club.

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